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## SEWERAGE °F QUEENS BOROUGH



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WITH the rapid increase of population, industries and commerce within the confines of New York City, engineering problems of vast extent are appearing, requiring not only the highest skill in structural design, but also great judgment in planning their solution. The public is familiar with those connected with the designing and construction of bridges, subways and water supply, all of which are properly described as being engineering feats of unprecedented magnitude. There are, however, other engineering problems just as difficult of solution of which we hear very little. One of these is the proper sewerage of the Borough of Queens, which borough presents the most complex problems scattered over a more extensive area than in any other borough of the city. Prior to consolidation, what is now called the Borough of Queens existed as Long Island City and the townships of Newtown, Flushing, Jamaica, and a part of Hempstead. Each of these townships, in turn, contained scattered settlements and villages, such as Hunter's Point, Blissville, Dutch Kills, Ravenswood, and two others in Long Island City, nine in Newtown Town-

ship, four in Flushing Township, six in Jamaica Township and four in Hempstead. With the incorporation of these townships into Greater New York City their old names were abolished and they were consolidated and re-divided into five numbered wards composing the present Borough of Queens.

One of the difficulties presented to the municipal engineer was the condition in which he found the street systems, maps and plans of these different settlements. The First Ward, formerly Long Island City, had been surveyed in 1872 by the Long Island City Improvement Commission, a street system and grades had been established and a system of monuments set where necessary and convenient. In the Second Ward, formerly the town of Newtown, no effort in these directions worthy of name had been made. In the Third Ward, very inefficient maps existed of the villages of Flushing, White-stone and College Point. These maps were of very little value for engineering purposes. Of the whole Fourth Ward only a contour and grade map of the village of Jamaica was in existence. Of the Fifth Ward there were no records of any value.

According to the charter of the Greater City no street improvements such as sewers, paving, curbing, grading, etc., could be authorized without officially approved and

adopted street system maps, grade maps and drainage maps. Actual construction could not begin until the city acquired title to the respective highways, which involved the several steps of condemnation proceedings, vestments of titles, opening proceedings, surveys and maps for the same and for damage proceedings. This meant that a territory of about 81,000 acres, or 127 square miles, had to be surveyed and laid out in accordance with city methods, a work involving an enormous amount of labor and expense.

Under the city charter all topographical work was done under the Board of Public Improvements; and during the first four years the amount so performed in Queens Borough was practically of no importance. With the amendment of the charter, taking effect in 1902, topographical work was placed in charge of the President of the Borough. The force employed on this work in 1902 was about twenty-five men, since which time it has been gradually increased until at present about 235 men are so employed.

The density of the population throughout the borough varies from practically nothing, where there are large wooded and uncultivated areas, practically inaccessible even by roads, to urban areas whose density of population is exceeded only by that in certain sections of Brooklyn and Manhattan; with all the varying intermediate degrees of density scattered irregularly over the borough. We may therefore say that the improvements to be planned for this area will be those, not for a city but for a whole country; but with the future in view when the different towns and cities situated in this country

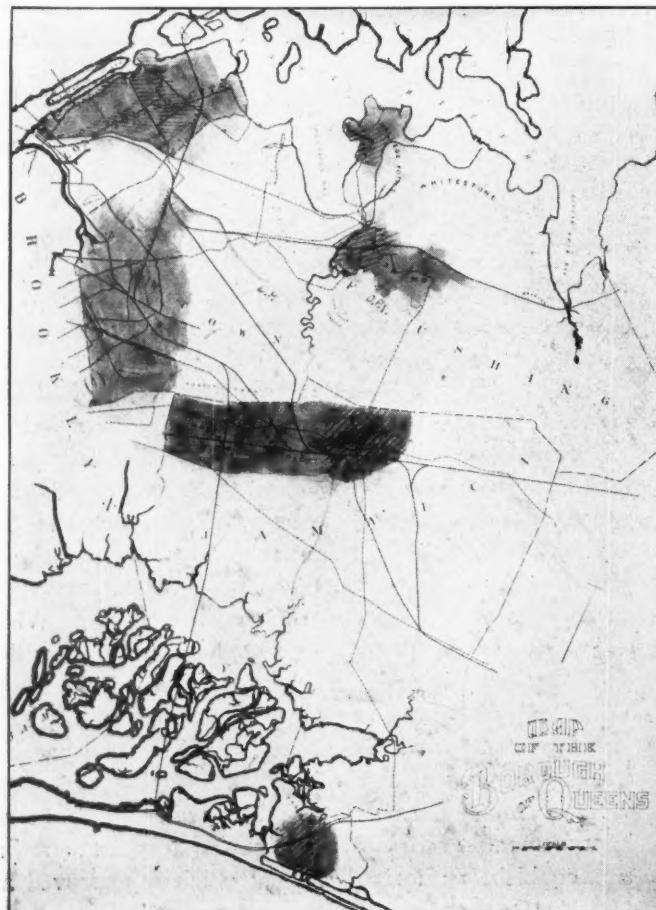


FIG. 1—BOROUGH OF QUEENS, SHOWING EXISTING SEWERAGE SYSTEMS

will some day in the future form an enormous metropolis.

Figure 1 shows by the shaded areas the sections for which drainage maps have so far been prepared and adopted, the heavier lines showing those which have been sewered or in which trunk sewers have been built or are under construction. As these include all of the more populous centers, this map also shows how these are scattered over the area of the Borough.

As might be expected the conditions existing at the present time in a number of these scattered villages are far from ideal or from such as would be tolerated in a large city, and it is to better these conditions that the Bureau of Sewers is now working. Figure 2 shows how



FIG. 2—FLOODED STREET IN RICHMOND HILL

the streets of Richmond Hill, Fourth Ward, have been flooded by heavy rains and the necessity there for storm sewers. Figure 3 shows conditions in Woodside, Second Ward, which are merely duplicates of what can be found in almost any thickly populated village which is not yet provided with sewers. The pollution of the soil which results from the great number of out-houses in this and similar villages on such porous glacial drift is made doubly important when we consider that practically all of the water for Queens Borough is subsurface water, much of it from comparatively shallow wells.



FIG. 3—OUTHOUSES IN WOODSIDE

In the First Ward only combined sewers are in existence. Some sections are well sewered but a number of the trunk sewers are already working at full capacity. Part of the territory is so situated that a separate system must be built, since the sewage must be pumped under Dutch Kill through a pressure pipe to the East river. The construction of the outlet sewer from one of these districts encountered many difficulties. To obtain the desired capacity of an equivalent of a 14-foot circular sewer, conditions demanded that the first mile have a twin horseshoe section; it then changes to a single horseshoe section equivalent to a 9-foot sewer (here, as in several other cities, the capacity of all sewers is expressed in terms of the diameter of an equivalent circular sewer). The lower third of this sewer was built through the only rock outcrop on Long Island; the second third crosses a swamp on heavy pile and timber foundation, many of the piles being 45 feet long; the remaining third was through a sand hill necessitating a trench 45 feet deep and 30 feet wide at the top.

In the Second Ward very complex problems of disposal are found. One of the trunk sewers here is a circular reinforced concrete sewer 15 feet in diameter, which discharges into a 16-foot sewer in the Borough of

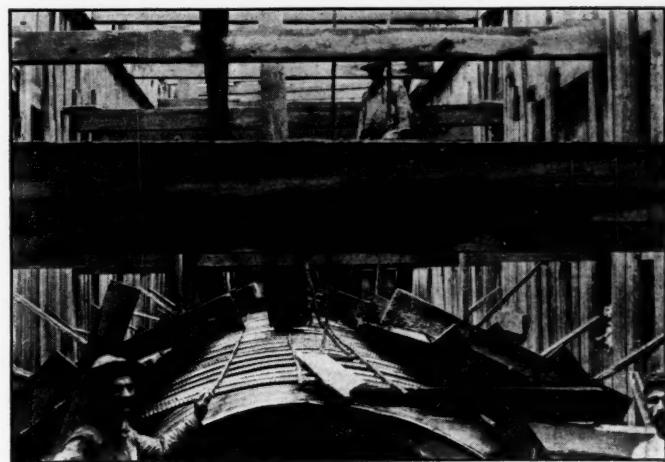


FIG. 5—MYRTLE AVENUE TRUNK SEWER  
Centering in Position

Kings, which in turn discharges at the head of Newtown Creek. This same outlet sewer receives the dry weather flow of two other sections, having a combined area of 4,500 acres, which requires to be pumped.

The remaining section of this ward presents the most difficult problem of disposal of the whole borough. Pumping stations and disposal plants will be required for the entire section, which has an area larger than Manhattan Island. The location of these stations and disposal plants is a matter requiring very careful and extensive study, and its importance from a monetary point of view is comparable with the location of a rapid transit subway route.

In the Third Ward, formerly the town of Flushing, sewers exist in part of two villages, but these are already working beyond their full capacity and will require reconstruction in the near future. For one of these a combined sewerage system has been designed, and a nine-foot trunk sewer of reinforced concrete using twisted rod reinforcement has been constructed. This will lead the sewage to a disposal plant which will consist of a screening well, grit chambers, sedimentation tanks, sprinkling filters and final settling tanks. Figure 4 shows the trunk sewer under construction. In another reinforced concrete sewer, the Myrtle avenue trunk sewer, corrugated bars of the St. Louis Expanded Metal and Corrugated Bar Co. were used (see Figs. 5 and 6).

In the Fourth Ward, formerly Jamaica, a separate system of sewers is in use, covering about 10 per cent. of the whole area. The effluent from these is treated in a chemical precipitation plant which will be changed before long so as to secure a more modern and effective treatment. Plans have been designed for the Richmond Hill section of this ward, providing for a ten-million gallon disposal plant.

In the Fifth Ward, commonly called Rockaways, is a separate system of sewers. In Far Rockaway the sewage is lifted by ejectors into a chemical disposal plant which also is antiquated and ineffective. The remainder of the ward presents a very difficult but interesting problem. The mean elevation of the ground is only five or six feet above mean high water. The winter population is about 10,000 but the summer about 175,000, the

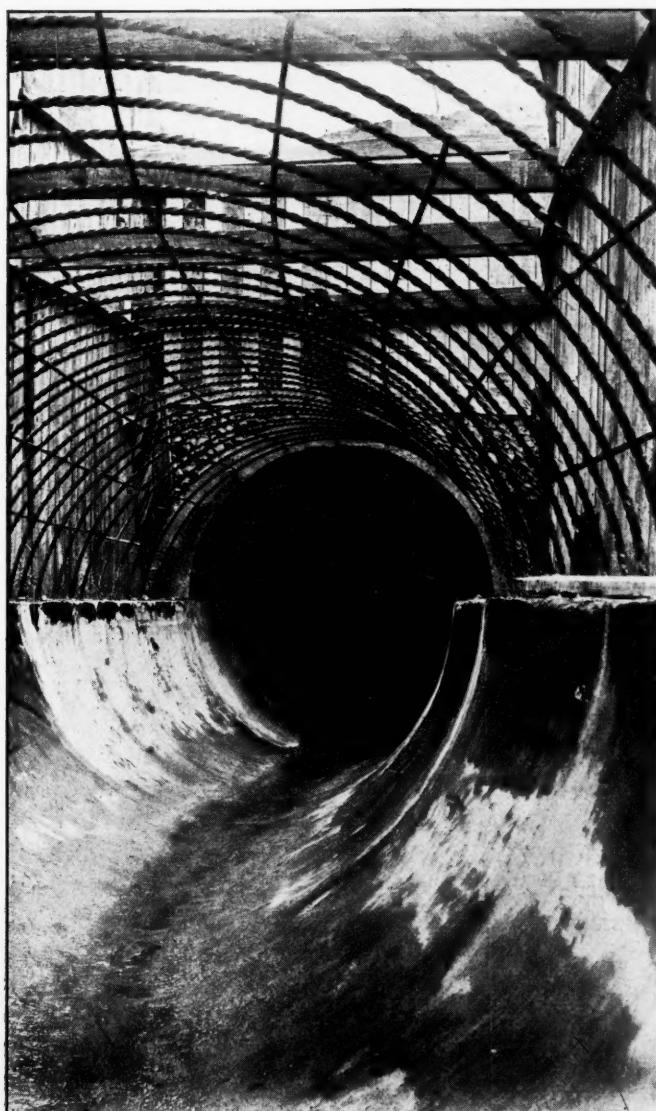


FIG. 4—INGLESIDE TRUNK SEWER



FIG. 6—MYRTLE AVENUE TRUNK SEWER  
Showing Good Alignment of Reinforcing Bars

territory being almost completely given over to summer resorts. It fronts upon Jamaica Bay and the ocean, but no sewage may be discharged into either, consequently a disposal plant must be designed which will be economical and effective when working at either the highest or lowest load.

Wherever separate systems are used or contemplated in this borough the storm sewers must extend through the entire length of each block to take care of the roof water, this being required by the state law affecting the discharge of crude sewage into the neighboring bays and rivers, the effect of which will be to more than double the cost of sewerage the largest part of this borough.

In this connection it may be mentioned that the matter of locating and estimating the various disposal plants needed in the near future in the borough is of great importance. The fixed charges and cost of maintenance of these plants will total into enormous figures, and it is obvious that a point will be reached where the cost of construction and of maintenance of a certain number of disposal plants would exceed that of a possible substitute, even though of very expensive construction, designed to carry the sewage of the Borough of Queens to some outlying part of the shore along the ocean front, where it could be discharged without creating a nuisance either in connection with bathing or by reaching the waters of New York Harbor.

The Borough of Queens has a shorter available water front than any of the other boroughs; that is, the shortest water front available for the discharge of crude sewage. Owing to the state laws referred to, we are not allowed to discharge crude sewage into Newtown Creek, Flushing Bay or Jamaica Bay. Little Neck Bay is so shallow that to discharge sewage into it would result in the formation of a gigantic cesspool. The Rockaways being summer resorts, the discharge of sewage along that

ocean front is, of course, entirely out of the question. The result is that we have only the East River from Newtown Creek to Flushing Bay and from Flushing Bay to Little Neck Bay available for the discharge of crude sewage. On account of this limited frontage there arise the problems of locating disposal plants, pumping stations, intercepting sewers and main outlets so as to be as economical as possible in both construction and maintenance costs, in addition to the problems of the extent and size of such structures.

Will the borough be in the near future of such importance as to population, wealth, commerce and industries as to warrant the design of such expensive structures? The preparations made to handle enormous increases in commuter travel being made by the Long Island Railroad, the trolley lines and the subways would appear to indicate the belief of financiers that such a condition will be very shortly realized. Figure 7 shows graphically the past growth of the borough in population, in traffic carried by the passenger lines, in the erection of buildings and in assessed valuation. Each of these is in a sense a measure of present and anticipated growth and each also should be considered in determining the

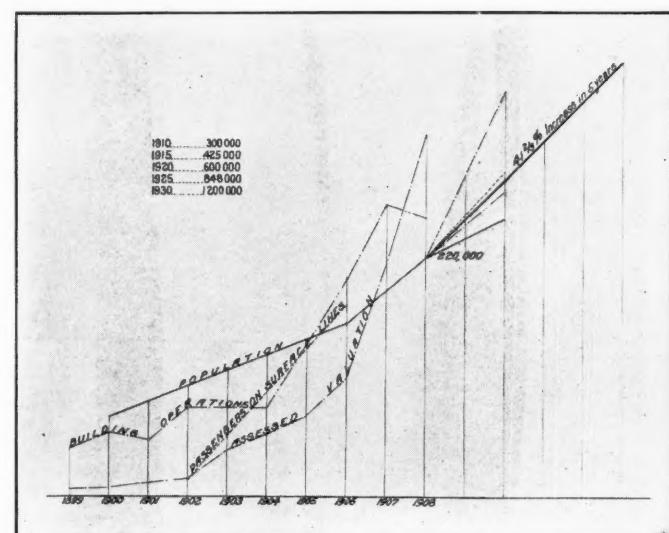


FIG. 7—PROBABLE INCREASE OF POPULATION.

amount of improvements which the city is warranted in carrying out. The projections of the four lines into the future were made by drawing each line at a slope which represents the average of past rates. The heavy line represents the mean of these four and is used in predicting future population.

As is indicated above, one of the difficulties in connection with constructing modern sewerage in the territory under discussion is the desirability of utilizing as much as possible of the old construction, and deciding just when the discarding of such is justified. Reference has been made to the insufficient size of a number of sewers, and in addition many should be replaced because of poor workmanship or materials. For a number of years cement sewers were used in Brooklyn and in some sections of Queens, the present condition of which is far from being satisfactory. The author believes that this is due largely to the use of green pipes, and that no

cement sewer should be placed under ground until it has been cured for at least three months. He knows of instances where green pipe but a few days old has been laid and put into use, in which the sewage appears to have permeated the shell of the pipe and this can now be readily broken between the fingers, revealing a material with little cohesion, and discolored throughout, showing permeability. The same rule is true concerning large concrete sewers. Sewage should not be allowed to flow through these until they have set for two or three months. If they must be used before this they should be provided with brick inverts.



FILTER BEDS, ELMHURST SEWAGE PURIFICATION PLANT

Another feature of certain of the present plants requiring future readjustment is the sewage treatment. It may be said that none of the chemical precipitation plants are very efficient. The Elmhurst plant was very poorly located; in fact, there appears to be no imaginable reason for placing it where it is. Figure 8 shows the filter beds of this plant for treating the effluent of the precipitation tanks, which are housed in the building shown at the head of this article. Neither the insufficiency of size of sewer nor the use of chemical precipitation necessarily reflects on the capacity of previous engineers. What would afford satisfactory drainage for an unpaved village miles from the city is no longer sufficient when the construction of paved city streets is considered imminent. But the present engineers can form some idea of the urban future of this area and must design and build accordingly.

#### Fireworks Ordinance

THE city of Syracuse, N. Y., adopted a fireworks ordinance in 1905 which appears to have given general satisfaction. Before its promulgation Ralph S. Bowen, then Commissioner of Public Safety, called upon the principal wholesale dealers in fireworks for suggestions, and made a careful study of the situation to determine what was and what was not dangerous. The result was that, receiving plenty of notice, the wholesale dealers and jobbers bought their stock with the idea of living up to the regulation; and there were none of the more dangerous fireworks for sale in the city in consequence. This has been the case ever since, it being the custom of the Department to send out, early in the year, a copy of these rules to various people interested. The present commissioner, Harlow C. Clark, states that there has

been, in consequence, a very great improvement on the noisy and dangerous Fourth's of previous years.

#### RULES AND REGULATIONS

##### GOVERNING THE SALE AND USE OF EXPLOSIVES AND COMBUSTIBLE MATERIAL WITHIN THE CITY OF SYRACUSE, N. Y.

No person or persons, firm, copartnership or corporation shall keep for sale, offer for sale, distribute, give away or have in his, their or its possession any fireworks of any character whatever, for use within the city of Syracuse, which shall contain dynamite, giant powder, nitroglycerine, dualin or other explosives more powerful than ordinary gunpowder. No person or persons, firm, copartnership or corporation shall keep for sale, offer for sale, distribute or give away, or have in his or their possession for use within the limits of the city of Syracuse, any giant firecracker or any other firecracker that is likely to maim or injure any person by the explosion thereof, except Chinese firecrackers, nor exceeding five inches in length; nor shall any person or persons, firm, copartnership or corporation keep for sale, offer for sale, distribute or give away, or have in his or their possession for use within the limits of the city of Syracuse, any toy pistols or toy cannons of any description whatever in which powder of any kind can be exploded, blank cartridge pistols, toy cartridge pistols or toy revolvers, repeating or bomb-jack marbles, kango clubs, or car track torpedoes, Vesuvius torpedoes, torpedo canes or ammunition for torpedo canes. No person shall place any torpedo of any description whatever upon the street car tracks or upon the public streets of the city. No person or persons, firm, copartnership or corporation shall sell, offer for sale or give away any fireworks of any character whatever to children under the age of twelve years.

A violation of the foregoing rules and regulations, or any part thereof, shall be punished by a fine of not exceeding fifty (\$50) dollars for each offense.

The foregoing rules and regulations governing the sale and use of explosives and combustible materials and substances within the city of Syracuse are hereby formulated and adopted by the Commissioner of Public Safety of said city, pursuant to Section 17 of Chapter 685 of the Laws of 1905, to take effect immediately.

#### STANDARD FORMS FOR SEWERAGE DATA

By HARRISON P. EDDY

Chairman, Committee on Statistics, Sanitary Section,  
Boston Society of Civil Engineers

THE Sanitary Section of the Boston Society of Civil Engineers was formed several years ago, for the purpose of stimulating interest in sanitary and sewerage matters. Soon after the Section was formed, the matter of sewerage statistics was taken up and discussed with the result that a committee—the Chairman of which was Bertram Brewer, City Engineer of Waltham, Mass.—was appointed to prepare a schedule or summary of statistics which might be adopted by the Section as a standard form to be followed in various cities and towns. The Committee finally reported to the Section a summary which, after further discussion and some amendment, was adopted. A copy of this is appended. In this form the data are arranged under the following heads: General Data; Collection; Discharge of Sewage; Pumping; Sewage Disposal; and Financial.

The summary, as adopted by the Sanitary Section, has met with considerable favor, and returns have been made for the year 1906 from the following twenty-three municipalities: Arlington, Dedham, Everett, Fall River, Fitchburg, Gardner, Haverhill, Hyde Park, Lawrence, Lowell, Marlboro, New Bedford, Newton, Springfield, Waltham, Watertown, Westfield, and Worcester, in Massachusetts; Laconia and Nashua, in New Hampshire; New London, in Connecticut; Pawtucket, in Rhode Island, and Plainfield, in New Jersey. It is quite natural that this work should have been confined, during its first year, largely to cities and towns in Massachusetts, although returns have

been received from two cities in New Hampshire, one in Rhode Island, one in Connecticut and one in New Jersey. It is hoped that this field will be very greatly broadened during the next year. The section intends to compile the statistics of the various cities and towns cooperating in this movement, and it is hoped that officials will facilitate such compilation by using this form in the preparation of their reports, which has already been done to some extent, notably by Providence, R. I., and Newton and Worcester, Mass. While it is important to have data reported according to a uniform schedule, the most important result of this work of the committee has been and will be the increase in the number of cities in which such statistics are made a matter of record. In many cities at the present time such data are not recorded at all—are not even known, in fact. Probably the summary as adopted could not be completely filled out for any city at the time of its adoption, and certain parts are of course inapplicable to some cities; but there has been an effort on the part of many to secure the information called for, and such a movement must result in good.

The statistics which have been collected have been tabulated and are to be published in the issue of the Journal of the Association of Engineering Societies which is now in press and which should be issued within a few days.

#### SUMMARY OF SEWERAGE STATISTICS

(In form recommended by Sanitary Section of Boston Society Civil Engineers.)  
For the year ending . . . . . 19 . . . . .

(City or Town.) (State.)

#### GENERAL

Population by census of 19 . . . . .  
Total area of city or town . . . . . square miles  
Area served by sewerage system . . . . . miles  
Collection System } For sewage only . . . . . miles  
} For sewage and surface water . . . . . miles  
} For surface water only . . . . . miles  
Method of disposal . . . . .

#### COLLECTION

MAINS (EVERYTHING BUT HOUSE AND CATCH BASIN CONNECTIONS)  
For sewage For sewage and For surface  
only surface water water only

1. Lineal feetstone . . . . .
2. " " brick . . . . .
3. " " concrete . . . . .
4. " " pipe . . . . .
5. " " extended during year . . . . .
6. Number of inverted siphons . . . . .
7. " " manholes . . . . .
8. Method of flushing . . . . .
9. Method of cleaning . . . . .
10. Number of automatic flushing tanks . . . . .
11. Number of direct connections with water mains for flushing . . . . .
12. Number of flushings of entire system during year . . . . .
13. Cost of flushing per mile . . . . .
14. " " cleaning . . . . .
15. Number of stoppages . . . . .
16. Miles of permanent under-drains . . . . .
17. Number of storm overflows . . . . .
18. Method of ventilation . . . . .

#### HOUSE CONNECTIONS

1. By whom made . . . . .
2. Sizes . . . . .
3. Number made during year . . . . .
4. Lineal feet laid during year . . . . .
5. " " discontinued during year . . . . .
6. Total miles in use . . . . .
7. Average cost per ft., connections made during year . . . . .
8. Number of stoppages coming to attention of department . . . . .

#### CATCH BASINS

1. Number . . . . .
2. Number cleaned . . . . .
3. Av. amount material removed per catch basin . . . . .
4. Cost of removing material per cubic yard . . . . .
5. " " " " catch basin per year . . . . .

#### DISCHARGE OF SEWAGE

1. Estimated population using sewer system . . . . .
2. Number of buildings connected . . . . .

	Average (gallons)	Maximum (gallons)	Minimum (gallons)
3. Daily discharge for year . . . . .			
4. " " " each user . . . . .			
5. " " quantity of factory waste . . . . .			
6. " " leakage into sewers . . . . .			
7. " " " per mile of sewer . . . . .			
8. Are quantities given under 3 to 7 estimated or measured . . . . .			

#### PUMPING

1. Description of plants . . . . .	
2. Description of fuels or power used:—	
A. Coal.	
(a) Kind . . . . .	
(b) Brand . . . . .	
(c) Av. cost per gross ton delivered . . . . .	\$ . . . . .
(d) Percentage of ash . . . . .	
B. Fuel for internal combustion engines.	
(e) Kind and grade . . . . .	
(f) Av. cost . . . . .	\$ . . . . .
C. Electricity.	
(g) Av. cost per k. w. hr. . . . .	\$ . . . . .
3. Amount of fuel or power consumed for the year . . . . .	gals.
4. Total pumpage for year with allowance for slip without	ft.
5. Av. static head against which pump works . . . . .	ft.
6. Av. dynamic head against which pump works . . . . .	ft.
7. No. of gallons raised one ft. per unit of fuel or power . . . . .	
8. Cost of pumping figured on pumping station expenses per million gallons raised one foot (dynamic), not including fixed charges . . . . .	

Describe screens.

#### DISPOSAL

##### SETTLING, SEPTIC AND CHEMICAL PRECIPITATION TANKS

1. Number of tanks	{ Settling . . . . .
	Septic . . . . .
	Chemical precipitation . . . . .
2. Total capacity of tanks up to flow line . . . . .	
3. Average daily quantity of sewage treated . . . . .	
4. Average length of time sewage remains in tanks . . . . .	
5. Disposition of effluent . . . . .	
6. Disposition of sludge . . . . .	
7. Volume of sludge produced per 1,000,000 gallons sewage. (If this is not known give depth of sludge in tank when cleaned) . . . . .	
8. How often are tanks emptied? . . . . .	
9. Cost of tanks . . . . .	
10. Cost of maintenance, including cost of disposing of sludge . . . . .	
11. Kinds and quantities of chemicals used per 1,000,000 gals . . . . .	

#### SEWAGE BEDS OR FILTERS

1. Type . . . . .	
2. Date of construction of works . . . . .	
3. Cost of beds . . . . .	
4. Total net filtering area . . . . .	
5. Number of beds . . . . .	
6. Average area of beds . . . . .	
7. Were loam and subsoil removed? . . . . .	
8. Character of filtering material (Give effective size if available) . . . . .	
9. System of underdrains (Depth, distance apart, etc.) . . . . .	
10. Average daily quantity of sewage treated . . . . .	
11. Average daily quantity of sewage treated per acre (net area) . . . . .	
12. Maximum daily quantity of sewage treated . . . . .	
13. Preliminary treatment . . . . .	
14. Dosing apparatus and size of dose . . . . .	
15. How long does sewage flow on one bed? . . . . .	
16. How often is each bed used? . . . . .	
17. Method of caring for surface of filters (Number of times raked, harrowed, ploughed, furrowed, etc.) . . . . .	
18. Cubic yards of material removed from surface of beds . . . . .	
19. Cost of removing same . . . . .	
20. Are crops raised, and if so, what kind? . . . . .	
21. Amount received for crops . . . . .	
22. Total cost of maintenance . . . . .	
23. Cost of maintenance per million gallons filtered . . . . .	
24. Water capacity of contact or trickling filters and decrease in same since plant was started . . . . .	

#### FINANCIAL CONSTRUCTION

Receipts.	Expenditures.
Balance of previous year \$ . . . . .	
Bonds issued . . . . .	Collection works: (a) mains . . . . . \$ . . . . .
Appropriation . . . . .	(b) house connections . . . . .
Assessments . . . . .	Disposal and purification works . . . . .
House connections . . . . .	Balance . . . . .
Other sources . . . . .	Total, \$ . . . . .
Total, \$ . . . . .	

#### MAINTENANCE AND OPERATION

Receipts.	Expenditures.
Balance of previous year, \$ . . . . .	Administration . . . . . \$ . . . . .
Appropriation . . . . .	Repairs . . . . .
Assessments . . . . .	Cleaning sewers . . . . .
Rentals . . . . .	" catch basins . . . . .
Other sources . . . . .	Flushing sewers . . . . .
Total, \$ . . . . .	Pumping . . . . .
	Disposal or purification . . . . .
	Unclassified expenses . . . . .
	Balance . . . . .
	Total, \$ . . . . .
	Interest on bonds . . . . .
	Sinking fund . . . . .

#### GENERAL

Total cost of collecting mains . . . . .	\$ . . . . .
" " " pumping system . . . . .	
" " " disposal works . . . . .	
" " " works to date . . . . .	
Bonded debt at date . . . . .	
Value of sinking fund at date . . . . .	
Average rate of interest on bonds . . . . . per cent.	
Proportion of cost of system assessed on abutters . . . . .	
Yearly assessment for maintenance . . . . .	
Method of assessing abutters and rate of assessment . . . . .	

\*Including payment for maintenance of joint disposal works.

## NIGHT SOIL COLLECTION AND DISPOSAL

Data Gathered by the American Society of Municipal Improvements

CITY	METHOD OF COLLECTING	TUBS, CARTS, PUMPS, ETC., USED	AMOUNT REMOVED	DISPOSITION MADE OF IT	WHAT EXPENSE AND WHOSE	IS IT CONSIDERED SATISFACTORY?	CONTROL OF CITY OVER REMOVAL AND DISPOSITION
HOLYOKE, MASS. . . . .	By contr'ors, under permit for cleaning.	Baltimore pumps, barrels and tanks.	Only 30 houses not sewered.	Sold to farmers. . . . .	Owner's expense; Yes. . . . .	Permits issued by H'ly Board. . . . .	Permits issued by H'ly Board. . . . .
LOWELL, Mass. . . . .	One licensed contractor.	Pumps, air-tight barrels and tanks of a year. 4 or 5-barrel cap'ty	9,000 to 10,000 barrels	Owner's expense; Yes. . . . .	Owner pays \$2 for 12 barrels. . . . .	City controls both. . . . .	City controls both. . . . .
NEW BEDFORD, MASS. . . . .	Contractors licensed by Aldermen.	Regular covered barrels, $\frac{3}{4}$ cu. ft. capacity.	None; all bldgs. sew'd 3,000 tubs, $3\frac{1}{2}$ cu. ft. each.	Removed beyond city mixed with sand and deodorants. Not used for fertilizing.	Owner pays \$1.50 for 1 to 3 tubs, up to \$10 for 46 to 48 tubs. . . . .	Regulated by Health Dept. Permit for each cleaning. . . . .	Regulated by Health Dept. Permit for each cleaning. . . . .
SOMERVILLE, MASS. . . . .	One contractor, under permits.	Tight barrels or tank	One team in spring and fall does all work.	Used as fertilizer on a grass farm.	Owner pays \$4 per load of 60 cu. ft. . . . .	Entire control. . . . .	Entire control. . . . .
SPRINGFIELD, MASS. . . . .	Licensed contractors	Water-tight tubs; no pumps specified.	Not known.	Private arrangement by owner. . . . .	Has been so for 25 yrs. Same contractor all that time. . . . .	Controlled by Supt. of Health. . . . .	Controlled by Supt. of Health. . . . .
WORCESTER, MASS. . . . .	17 licensed carts. . . . .	Regulation tight tubs.	Not half enough to keep 17 carts busy. City 90% sewer'd.	Composted on farms. . . . .	Owner's expense. . . . .	Fairly, but not altogether. . . . .	Absolute control. . . . .
PAWTUCKET, R. I. . . . .	Private contractors. . . . .	No regulations. . . . .	Very little. . . . .	Placed on land outside city limits.	Owner's expense. . . . .	Must not be deposited within city limits. . . . .	Must not be deposited within city limits. . . . .
PROVIDENCE, R. I. . . . .	Private contractors. . . . .	No regulations. . . . .	Practically none. All houses use sewers.	Farms in surrounding country.	Expense of owner. . . . .	Absolute control. Any offense to adjoining properties subjects licensee to revoking of license. . . . .	Absolute control. Any offense to adjoining properties subjects licensee to revoking of license. . . . .
HARTFORD, CONN. . . . .	One licensed contractor.	Tight barrels with clamped covers.	Not enough to keep one man busy.	In some cases thrown upon the ground and a furrow of earth plowed over it at once, covering it more or less. Another part is thrown into deep trenches, alternate layers of night soil and earth; after dissolving, rating and deodorizing is sold to farmers for fertilizer.	Expense of owner. . . . .	Yes, generally. Compared with few privy vaults and these rapidly disappearing. . . . .	Yes, generally. Compared with few privy vaults and these rapidly disappearing. . . . .
ALBANY, N. Y. . . . .	Licensed scavengers. . . . .	Tight barrels with clamped covers carried in open wagons	Used upon land as fertilizer in surrounding country outside city limits.	Used upon land as fertilizer in surrounding country outside city limits.	Owners pay \$5 per load of 5 barrels of 200 lbs. each. . . . .	Under control of Commission of Public Safety. . . . .	Under control of Commission of Public Safety. . . . .
BUFFALO, N. Y. . . . .	One licensed contractor.	Water-tight tubs, About 3,000 lbs a year.	Used upon land as fertilizer in surrounding country outside city limits.	Used upon land as fertilizer in surrounding country outside city limits.	Owners pay \$5 per load of 5 barrels of 200 lbs. each. . . . .	Under control of Commission of Public Safety. . . . .	Under control of Commission of Public Safety. . . . .
ROCHESTER, N. Y. . . . .	Private parties licensed by Dept. of Public Safety.	Covers screwed on, carried in ord. carts or drays. Large dippers used.	Unknown. . . . .	Hauled into the country and buried. . . . .	Reasonably so. . . . .	Vaults in sewer'd district must be cleaned out and obliterated. Cleaning under cont'l of Board of Health. Bd. of Health controls removal. No attempt to control disposition as farms are outside of city. . . . .	Vaults in sewer'd district must be cleaned out and obliterated. Cleaning under cont'l of Board of Health. Bd. of Health controls removal. No attempt to control disposition as farms are outside of city. . . . .
TROY, N. Y. . . . .	By licensed scavengers.	Water-tight tubs, About 3,000 lbs a year.	Unknown. . . . .	Owner's expense. . . . .	Reasonably so. . . . .	Vaults in sewer'd district must be cleaned out and obliterated. Cleaning under cont'l of Board of Health. Bd. of Health controls removal. No attempt to control disposition as farms are outside of city. . . . .	Vaults in sewer'd district must be cleaned out and obliterated. Cleaning under cont'l of Board of Health. Bd. of Health controls removal. No attempt to control disposition as farms are outside of city. . . . .
CAMDEN, N. J. . . . .	Private company. . . . .	Pumped into screw-top casks.	One agent says 150 cu. ft. a day. Company says 600 tons a year.	Owner's expense. . . . .	Yes, Done in suburbs only. . . . .	City requires minimum amount of nuisance. . . . .	City requires minimum amount of nuisance. . . . .
ELIZABETH, N. J. . . . .	Private contractors. . . . .	Pumped into airtight barrels liberally dosed with crude carbolic acid.	Very little. City well sewered. . . . .	Owner's expense. . . . .	Yes. . . . .	City requires minimum amount of nuisance. . . . .	City requires minimum amount of nuisance. . . . .

## NIGHT SOIL COLLECTION AND DISPOSAL—(Continued)

CITY	METHOD OF COLLECTING	TUBS, CARTS, PUMPS, ETC., USED	AMOUNT REMOVED	DISPOSITION MADE OF IT	WHAT EXPENSE AND WHOSE	IS IT CONSIDERED SATISFACTORY?	CONTROL OF CITY OVER REMOVAL AND DISPOSITION
FORT WAYNE, IND. . . . .	Private contractors on order from H'lh Dept.	Various types of tubs and carts used but all must be odorless.	Not known. . . . .	Dumped in Maumee river about 2 miles from city limits.	Property owner's expense.	Yes. . . . .	Contractors prosecuted if work causes nuisance.
SOUTH BEND, IND. . . . .	Private contractors. Work done at night. City rents farm at \$10 a month. City collects. . . . .	Tight, closed barrels. 12,000 barrels a year. . . . .	Placed in barrels with dipper.	Buried on a farm. . . . .	Owner pays 50c. a barrel.	Yes. . . . .	Permit obtained from clerk.
GRAND RAPIDS, MICH. . . . .	Private contractors	25,000 barrels a year. . . . .	Dumped in pits on farms outside of city. Arrangements for dumping made with private owners.	Charge, 50c. a barrel. City has been cleaned on orders received by inspectors from owners.	Vaults cleaned in some townships on a count of nuisance.	Yes. . . . .	None, except H'lh Bd., may compel cleaning. Ann' license of \$10 per wagon, and permit or each case. Scavenger rpts. amount remv'd. and place and method of disp'l. H'lh Dept. has control.
SAGINAW, MICH. . . . .	Private contractors	Pumped into barrels. . . . .	Hauled to dumping ground in country; also to farms. Removed to country outside of city limits a n d plowed under.	Owner pays \$3 per cu. yd.	Controlled by cooperation of inspectors of Health Dept.	Yes. . . . .	Only through Health office in inspecting and condemning v'lts.
MILWAUKEE, WIS. . . . .	Licensed scavengers. Removed during night.	Water-tight carts, 8,000 to 10,000 cu. yds. per year. Am't decreasing as vaults are being condemned.	Hauled to city dump inside city limits, but in isolated place. Buried in pits and covered with sand, cinders, etc.	Gives general satisfaction. Believed to be the only way for successful disposal.	As conditions permit.	Yes. . . . .	Ordinance compels owners to clean v'lts. Permits issued by Health Department.
DES MOINES, Ia. . . . .	Private contractors	Water-tight barrels. 1,154 loads from April 1, 1907, to April 1, 1908.	Deposited in places petitioned by all the property owners and residents within 1,500 feet of the place of deposition.	Expense of property owner. Amount difficult to approximate.	As conditions permit.	Yes. . . . .	To a certain extent accumulation at sewer outlet will in time prohibit its continuance.
Louisville, Ky. . . . .	Water-tight barrels, carried on wagons. Disinfected and deodorized.	Approximately 1,000 tons annually.	Towed in barges to city limits and there dumped into river.	Property owner (not tenant) pays whole cost.	Property owner pays 10c. per cu. ft.	Yes. . . . .	No charge by city for use of dumping trap.
NEW ORLEANS, LA. . . . .	Barrels hauled on drays to river bank, there trans. to barges. Half dozen or more Sanitary Excavating Cos.	Hand pumps; tight barrels with tight-fitting iron covers.	All houses have vaults or cesspools. (Sewer system under construction.) Not known even approximately.	Property owner pays whole cost.	Property owner pays 10c. per cu. ft. per day. . . . .	Yes. . . . .	None remvd. Sewered. None remvd. Sewered. None remvd. Sewered.
DALLAS, TEX. . . . .	Tanks on wagons. . . . .	Tanks on wagons. . . . .	Emptied into sewer. . . . .	None remvd. Sewered. None remvd. Sewered. None remvd. Sewered.			
SALT LAKE CITY, UTAH. . . . .	Licensed scavengers. Between 11 p. m. and 5 a. m., May 1 to Oct. 30. Other months, 10 p. m. to 6 a. m.	Strong, water-tight vessel or wagon, covered so as to be in offensive. Some use "odorless" excavating," lumps, which are very satisfactory	Dumped through screened trap into main outlet sewer. Formerly sewer manholes on laterals used, and trouble caused by deposits.	None remvd. Sewered. None remvd. Sewered. None remvd. Sewered.			

CITY	METHOD OF COLLECTING	TUBS, CARTS, PUMPS, ETC., USED	AMOUNT REMOVED	DISPOSITION MADE OF IT	WHAT EXPENSE AND WHOSE	IS IT CONSIDERED SATISFACTORY?	CONTROL OF CITY OVER REMOVAL AND DISPOSITION
HOBOKEN, N. J. . . . .	Private contractors . . . . .	No night soil. All sew'd very few houses not sewer'd.					
HARRISBURG, PA. . . . .	Private contractors, mostly colored, licensed.	Wooden barrels 'pd tanks on wagon gears, filled at top, emptied by gate at rear. Some iron wagons with suction pumps.	Approximately 1607 loads per annum.	Discharged into some of the large trunk sewers.	\$10 per load; paid by householder.	Not satisfactory . . .	Scavenger licensed and permit required for each cleaning. Collection bet. 11 P.M. and 5 A.M. City inspects and designates place of disposal. No control.
READING, PA. . . . .	Private contractors.	Pumped by hand-suction pumps into sealed barrels hauled on four-wheeled dray, 10 barrels to a load.	Unknown . . . . .	Ploughed under on farms outside city limits.	Owner's expense . . .	Yes . . . . .	
BALTIMORE, MD. . . . .	Odorless Excavating Companies.	Water-tight barrels, or water- and airtight tank wagons. Pump made by Murrill & Keyser, of Baltimore.	During 1906, 67,039 loads taken to barges; 9 miles from city.	Removed by barges to point 6 barrels to a load.	Owner's expense . . .	As satisfactory as possible.	Health Dept. has absolute control.
WASHINGTON, D. C. . . . .	Odorless Excavating Companies. Contracts pumped into barrels by odorless pump.	Empty whiskey barrels with caps carried on two-horse, low-set wagons.	Last fiscal year 21,004 barrels were collected and disposed of.	Carried on scows down the Potomac to Virginia, where it is unloaded into pits and later used for fertilizer.	Contract price for collection and disposal, \$16,500 per annum.	Yes . . . . .	Collected and disposed of under supervision and inspection of Street Cleaning Dept.
CHARLESTON, S. C. . . . .	By contractors . . .	Water-tight barrels .2434 vaults cleaned in Fertilizer for truck farms .1907.	2,434 vaults cleaned in Fertilizer for truck farms .1907.	About 33½c. per bbl. paid by owners.	Best done under the circumstances, but obnoxious and unsanitary.	Yes . . . . .	Subject to regulations of Board of Health.
AUGUSTA, GA. . . . .	None to remove . . .	Iron barrels . . . . .	9,612 barrels . . . . .	Hauled to country and used for fertilizer.	\$3,100. . . . .	Yes . . . . .	
SAVANNAH, GA. . . . .	By contract . . . . .	Water-tight wagons . . . . .	2,415 vaults cleaned in 1907.	Dumped into the sewer . . .	Owner's expense . . .	Yes . . . . .	City regulates time and has supervision over carts.
CINCINNATI, O. . . . .	Private firms . . . . .	Wagons haul 20 barrels each, capacity 4 cu. yd. each. Barrels have air-tight covers. No pumps used.	10,000 cu. yds. in 1907	Dumped through conveniently located manhole into fairly large-sized sewer through which there is considerable flow. Tin or metal flume used so that sides of manhole are not spattered. Manhole selected some distance from dwellings so no complaint from odor.	Fairly so. Utimately intended to treat it at garbage disposal plant	Under direction of Health Department.	
CLEVELAND, O. . . . .	Trans. from vaults to barrels by pails suspended from long poles. Work done by Dept. of Public Service.	Wagons haul 20 barrels each, capacity 4 cu. yd. each. Barrels have air-tight covers. No pumps used.	10,000 cu. yds. in 1907	Hauled to country and buried. Contemplate dumping into sewer.	\$1.90 per cu. ft., paid by owner.	Only fairly satisfactory.	Health Dept. controls carts, time of cleaning, disposition and charge.
COLUMBUS, O. . . . .	Licensed contractors	Water-tight carts Approximately 210,- with air-tight covers; also some tight barrels.	200 feet.	Expense limited to dumping into sewer.	So far as known . . .	So far as known . . .	Inspects, and regulates method of ordinance.
DAYTON, O. . . . .	Private vault cleaners.	Water-tight carts with metal beds.	No record . . . . .	Taken to Fertilizer Co. and farms outside of city limits.	35c. a barrel.	Property owner pays No. . . . .	Contractor under bond and controlled by Health Board.
YOUNGSTOWN, O. . . . .	Contract let by Bd. of Health.	Tubs water-tight, with air-tight lids.	About 1,000 vaults cleaned per year.	Taken to farms . . . . .	12 to 14c. per cu. ft.	Property owner pays No. . . . .	

## HYDROLYTIC SEWAGE TANKS

## Principles of Action—Construction of Tanks—Theory of Operation—Separation of Suspended Solids and Colloids—Hydrolyzing Chamber

ON another page of this number will be found an article describing the results of investigations made at Hampton on the effect of surface contact in the removal of colloids from sewage. There have recently been constructed at Norwich, England, tanks utilizing these results, which plant is probably the latest advance in sewage purification in England; and the ideas, as far as we know, have not yet been adopted in any plant in this country. Arthur E. Collins, Past President of the Institute of Civil Engineers, City Engineer of Norwich, described these tanks a few weeks ago in a paper before the Incorporated Association of Municipal and County Engineers. (This association, by the way, has during the past thirty-five years published a more complete set of papers on sewerage than probably any other society in the world.) These tanks are not yet in operation, consequently no data concerning their operation are available.

Mr. Collins visited various disposal plants before deciding upon what to adopt for Norwich, and was "forced, against his prejudices, to the conclusion that the Hampton experiments and treatment proved that the general practice of tank treatment of sewage was based on error, and he decided to recommend the adoption of the Travis system of hydrolytic tank treatment for Norwich," and plans for these, and embodying many new features, were prepared by him in collaboration with Dr. Travis.

As is stated in the article on colloids, above referred to, the removal of these must, in the opinion of the investigators, be effected by surface contact. "The principles associated with the hydrolytic tank are: First—To exclude from any prolonged tank operation as large a proportion of the liquid as possible. Second—To effect the sedimentation of the depositable contents of the sewage in such a way as will avoid the rising floor of sludge, which has been seen to interfere with, and to terminate, other tank operations, by substituting therefor a disappearing floor of liquid, which will increase the sedimentation efficiency and will make it perpetual. Third—To separate the hostile forces of deposition and gaseous eruptions by limiting these operations to their own separate compartments. Fourth—To prevent undue accumulations of scum and sludge by periodically withdrawing that proportion which the special method of operating the tanks may dictate. Fifth—To correct the frequent outrush of disturbed deposited matters, the result of gaseous eruptions, by the redeposition and removal of these solids in an addition chamber. Sixth—To submit the entire volume of liquid to the attracting influences of self-cleansing surfaces in order to abstract as large a portion of the finer suspended and colloidal solids as possible; and Seventh—To maintain continuously the pre-determined capacities of the tank.

"These principles are, in the main, secured by dividing the tank, which is in its lower part wedge-shaped in

transverse section, into three compartments by a longitudinal arch-shaped division, this shape having been adopted for constructional reasons. This arch has openings at its springings and its crown for liquid communication. The outlet end of the tank has a level weir, which is divided by the arch, so as to apportion a definite width of weir to each of the compartments. The two lateral compartments or chambers are devoted to sedimentation, and the central to sludge reduction, the wedge-shaped portion being for sludge collection and removal.

"The cross-section of the hydrolytic tank is so admirable for facilitating rapid deposition and easy removal of solids in suspension that it has been adopted in the Norwich scheme for the detritus tanks.

"The sewage will enter the sedimentation chambers only. The first volume which will flow into them will pass through the openings in the lower part of the arch into the wedge-shaped portion, which will become gradually filled by the succeeding volumes. As the sewage continues to flow the liquid will rise equally in all the chambers until it is level with the weir; the communication between the reduction chamber and its outlet weir being upward through the crown openings in the arch, and thence along a channel carried by the arch. Thereafter the proportion of liquid passing through each of the chambers will be determined by the relative width of its weir to that of the others.

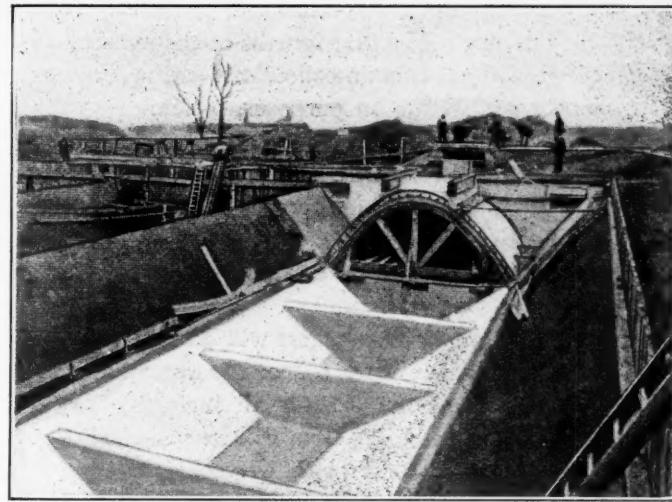
"Numerous experiments have been made in order to ascertain the most advantageous division of the weir. The weir of Hampton hydrolytic tank was originally proportioned in the ratio of 87.5 per cent. to the sedimentation chambers, and of 12.5 per cent. to the reduction chamber. It was subsequently altered, for experimental purposes, to 80 per cent. and 20 per cent. respectively. The former or even slightly higher percentages might be recommended in the case of a notably weak sewage; the latter would be more suitable for one comparatively strong.

"The period during which the liquid will have to remain in the several chambers has also been the subject of continuous investigations. These have shown that no commensurate advantage would accrue from a longer stay in the tank than four hours for the liquid passing through the sedimentation chambers, and twelve hours for the liquid flowing through the reduction chamber. They have also demonstrated that this rate of flow can be accelerated to, and to even less than, one and three hours respectively without either disturbing the sludge or giving rise to an excessive amount of suspended matters in the effluent.

"The sedimentation chambers are more or less wedge-shaped on transverse section and, as previously stated, receive the entire volume of sewage. Of this volume, 80 per cent. will, in the Norwich tanks, traverse the chambers, and will, on the average flow, pass over the weir at the end of the tank in four hours, while the remaining 20 per cent. will descend, through the opening in the arch, into the reduction chamber. In other words, the contents of the upper two-thirds of the vertical height of the chamber, representing 80 per cent. of the sewage, will constitute a forwardly moving force, which will carry

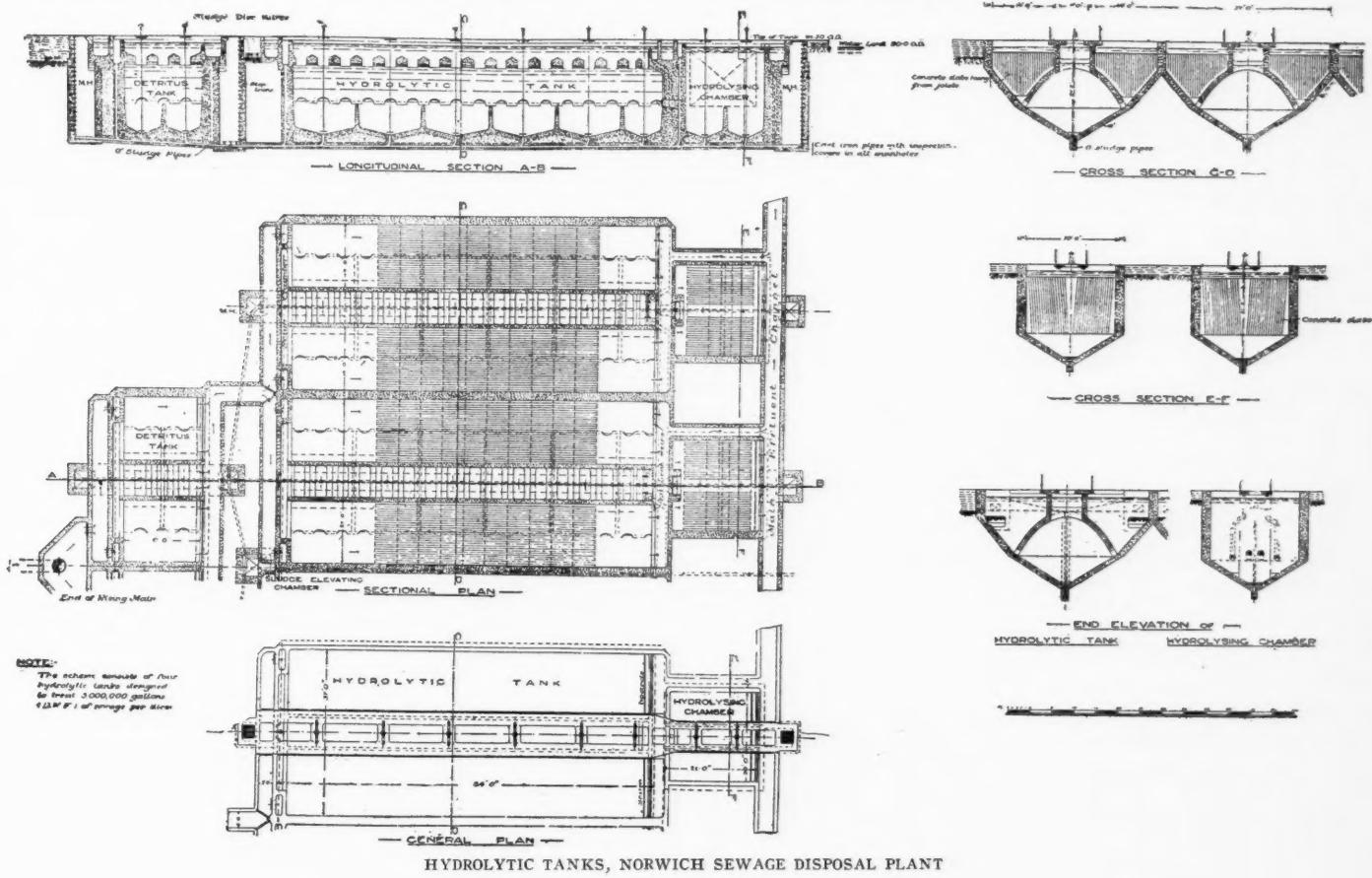
the rising and falling particles some distance along the chambers. The light suspended solids will, by this and by their own force, reach the surface, where they will be retained by the shallow scum wall near the weir. The contents of the lower third of the chambers, the representative of the remaining 20 per cent. volume, will be a downwardly directing force, or disappearing floor of liquid, into which the depositing solids will fall, and by which they will be conveyed into the reduction chamber. These solids will, therefore, only have to descend, in virtue of their own gravity, to the junction of the upper two-thirds with the lower third, before entering the volume which will carry them out of the chambers as a concentrated sewage. The degree of concentration of this liquid can be expressed by saying that the greater part of the original solids in suspension in 100,000 volumes of the sewage entering the chambers will be collected in the lower 20,000 volumes, which will pass out of the bottom of them.

"The liquid itself will also be found to be of varying degrees of specific gravity. When it is heavier than the liquid contents of the chambers, it will descend and traverse the lower limits of the chamber to the end, and then gradually rising upwards will force the lighter liquid over the weir. When it is of lighter specific gravity, it will rise and travel to the end of the tank, on the surface of the heavier liquid, which will be gradually displaced downwards, into the reduction chamber. So that, under all circumstances, the depositing solids and the heavier liquid will pass through the openings into the reduction chamber, while the liquid containing the smallest amount of solids in solution will pass out of the tank.



HYDROLYTIC TANK UNDER CONSTRUCTION

"The adaptability of these chambers to the high rates of flow of liquid through them, already alluded to, can now be easily understood, for if the contents of the upper two-thirds of the chambers pass rapidly through them, the contents of the lower third, conveying the deposited solids, pass as rapidly out of the bottom of them. The principle of excluding as large a proportion of the liquid as possible from any prolonged tank operation will thus have been secured, for 80 per cent. of the liquid will usually have passed out of the tank in four hours. It is, however, necessary to submit the liquid to the attracting influence of self-cleansing surfaces or colloid collectors, hereafter termed colloid'ors, in order to obtain the benefit of that principle. This will be brought about by placing these colloid'ors in the end three-fourths of the chamber.



bers, whose dimensions are increased to provide for the capacity they occupy. The first fourths of the sedimentation chambers will not contain colloid'ors, and will be devoted solely to sedimentation purposes, which, in so far as the grosser matters are concerned, will be practically completed therein. In the end three-fourths the sedimentation of the less gross matters, and the abstraction from the liquid of the finer substances and colloidal solids upon the colloid'ors, will be in active operation until the liquid leaves the tank.

"The capacities of these chambers will be always maintained, for sludge will neither collect nor form in them, except such as becomes attached to all surfaces, and as the particular surfaces in this tank will be self-cleansing, the deposits will, when their weight overcomes the power of attraction, fall away from them into the reduction chamber.

"The reduction chamber will be the recipient of the concentrated sewage, and will have the rate of flow of its liquid contents diminished to one-third of that in the sedimentation chambers, in order that the suspended matters may be deposited into its lower part, or sludge space. While depositing its solids the liquid will flow forward and upward to the weir, over which it will on an average pass in twelve hours after it has entered the chamber. The action occurring herein will be a modified form of septic tank operation. There will be the same continuous formation of gas, the more or less periodical discharge of the gas so formed, and the concomitant disturbance of the sludge. The forward movement of the liquid will carry some small proportion of the disturbed deposited matter out of the chamber as well as project the redepositing sludge some distance toward the outlet end. The disturbance will, however, be limited by reason of the smaller amount of sludge accumulations, owing to the periodical sludge withdrawals, and will only appertain to one-fifth of the sewage flow, and not to the entire volume, as in septic tanks. For whatever the disturbance in the reduction chamber may be, it will never be communicated to the sedimentation chambers, nor will the gases which occasion the disturbance ever contaminate the liquid flowing through these chambers.

"The ratio of the depositable solids—the solids in suspension—to the converted matters may be sufficiently accurately expressed as 3 to 1—that is to say, three-fourths, or 75 per cent., of these solids will either appear in the effluent or must accumulate in the tank as scum or sludge. As the essential object of a tank operation is to adequately protect the effluent from suspended impurities, the excess accumulations of scum and sludge must, therefore, be removed if this object is to be effectually accomplished.

"The scum has been assumed to be a desideratum, but this is not so. It is in reality detrimental, in that it acts as a barrier to the free escape of the gases, and in this way encourages a larger scum formation. It will, therefore, be regularly removed from the sedimentation and reduction chambers by drawing it back to the scum outlet channels.

"The periodical removal of the sludge, though it may be a matter of some difficulty in flat-bottomed tanks, will be easily effected from the reduction chamber. Numerous observations, however, have shown that it is altogether futile to attempt to do this from one outlet, for the liquid will come through when the angle of the sludge surrounding the outlet valve approaches to from 20 degrees to 30 degrees above the horizontal. Therefore, the bottom of the reduction chamber must be constructed as a series of inverted cones, or alternatively pyramids having slopes of sufficient steepness, and provided with outlet valves at their bottoms to ensure the efficient removal of the sludge.

"The character of the operation will by these means be brought under entire control. For if the chief desirability be to secure the maximum of sludge reduction, this can be effected by maintaining a high sludge level in the chamber. If, on the other hand, it be necessary to minimize gas formation, aerial nuisances and malodorous effluent, this can be secured by keeping the accumulation of sludge down to its lowest possible limit.

"The liquid issuing from the reduction chamber will be conducted to the hydrolyzing chamber in order to correct the periodical issue of disturbed deposited matter from the former chamber, and to submit the liquid to the attracting influence of colloid'ors. These will be placed throughout the entire chamber, excepting in the lower part thereof, which will be reserved for sludge collection and withdrawal. The liquid will enter towards the bottom of the chamber, and will flow forward and upward around the colloid'ors to the weir, which it will cross in five hours on an average after it has left the reduction chamber and entered the hydrolyzing chamber. The suspended solids which will have been carried over from the reduction chamber, and the matters which will be arrested by, and will fall from, the colloid'ors will be periodically withdrawn through the sludge outlet valves. The scum which will form on the liquid in the chamber will also be regularly removed to the scum outlet channels.

"The principles and practice of the hydrolytic tank operation have now been considered, and it is submitted that these considerations have demonstrated that the hydrolytic tank carries the operation further and more adequately protects the subsequent treatment area than does any other tank—not merely in correcting the outflow of suspended matter from it, nor solely in excluding a large proportion of the liquid from an unnecessary tank operation, nor even in causing to be removed a fair proportion of the finer suspended and colloidal solids from the liquid, but also in the efficiency of its provisions for and the easy method of operating, the removal of the accumulations during the continuous work of the tank. Chemical precipitation tanks achieve some of these objects, but hardly to the same extent, and at no inconsiderable expense for chemicals, which not only add to the actual amount of sludge to be dealt with, but are also associated with less automatic methods of sludge collection and removal.

"In conclusion, the writer affirms that if one fact more

than another has been clearly set out in this communication, if practical experience also has demonstrated anything, it is the overwhelming necessity for sludge removal from all tanks, and the fact that this necessity increases in proportion to the clarity of the effluent. He desires to emphasize this, not only in relation to sludge removal, but also in regard to its subsequent disposal, the provision for which can scarcely be too ample in any sewage treatment area."

## OHIO WATER AND SEWAGE PURIFICATION

Investigation of all Plants in the State—Eight Unsatisfactory Water Plants—Poor Designing and Construction—Neglect and Ignorance in Operating Sewage Plants.

BY R. WINTHROP PRATT

Chief Engineer, State Board of Health

THE legislature two years ago passed an act directing the State Board of Health to make an investigation of the construction, methods of operation, and efficiency of all water purification and sewage purification plants in the State.

The principal objects of the investigation were (1) to find out which plants were efficient and which were not; (2) to determine whether the cause of inefficiency was due to poor design and construction, or to carelessness and ignorance in operation; (3) to interest and instruct the local officials with reference to the care of the plants under their charge, and to secure their cooperation in obtaining the best results at all times; (4) to secure general data in regard to problems of water and sewage purification, for the guidance of the State Board of Health in solving future problems and in supervising the operation of existing plants; (5) to obtain similar data in readily accessible form for the use of local officials, health officers, and engineers who may in the future be called upon to solve problems relating to water and sewage purification; and (6) to so study the matter that there could be made at the end of the investigation intelligent recommendations to the legislature for enacting laws to properly control the installation and operation of water and sewage purification plants.

If the Board had, ten years ago, been directed to obtain this general information, the scarcity of existing plants would have made it necessary to study the subject by means of small experimental plants, as has been done by the Massachusetts State Board of Health for the general benefit of all cities and towns in that State, and as has been done by several of the larger cities in the United States previous to adopting plans. The subject has, however, except as regards certain details, passed beyond the experimental stage; and we now have opportunity for investigating full-sized plants under the actual conditions which affect their operation. This has been the first investigation of the subject of any considerable extent, so far as water purification is concerned, which has dealt entirely with existing plants instead of with experimental devices. As there are a number of large plants in Ohio as well as a variety of design, it has been

possible to make the scope of the investigation very comprehensive and to include, in a practical way, studies of many important features of operation and construction.

Soon after the act was passed, the Board engaged two special assistant engineers experienced in matters relating to water and sewage purification, one of whom was placed in charge of collecting information relative to water purification and the other that relative to sewage purification. These special assistant engineers have during the twenty months from April, 1906, to November, 1907, made continuously a series of examinations and inspections of all water and sewage purification plants in this State. Each examination covered a period of from one to five days or more. During each examination there were made the chemical, bacterial and physical analyses necessary to determine the efficiency of the plants from these standpoints; and complete records were kept of all features relating to the operation, cost, and general efficiency of the plants. During the investigation, all information relating to the construction of the plants has been studied and recorded, and to supplement the data obtained by the Board's engineers, records of certain features of operation have been kept with considerable accuracy at a large number of the plants by the local managers.

### WATER PURIFICATION PLANTS

At the beginning of the investigation there were but six plants out of the nineteen studied which were satisfactory. Through the work of the State Board of Health, with the cooperation of the local officials, there were at the end of the investigation eleven plants which were producing an effluent that could be classed as safe, and eight which were producing an effluent that could not be so classed. Three of the eleven have but a slightly polluted water to treat; that is to say, the work they are called upon to perform is not great. The reasons for the eight failures were, in most cases, poor construction or outgrown plants, and necessarily poor operation, although in one case the failure can be attributed to poor operation alone.

Most of the failures were due indirectly to lack of intelligent preliminary study; and at several places it was found that the plant was cheapened during its construction by the introduction of inferior material, so that a satisfactory plant was not actually secured in spite of the excellence of the original plans.

The quality, amount, and method of handling the coagulant are very important features; and it has been found at several plants that the purification effected varied with the amount of coagulant used. A definite minimum amount should be used, even though the raw water be clear. Severe typhoid epidemics have occurred in this State on account of a desire to economize by using too little coagulant.

The necessity for proper training and intelligence of the filter operator has been shown, by the investigation, to be of utmost importance; and wherever possible, every filter plant should have a laboratory, or at least the necessary apparatus for making regular examinations of the

raw and filtered water. With the larger plants, more complete and more frequent analyses should be made by a resident chemist. In case the small size of the plant makes it a distinct burden to have an expert in charge at all times, it is practicable to train an operator of average intelligence to make simple tests by which poor results can be detected, and to have him act under the general supervision of a high-class expert who shall visit the plant at regular intervals, perhaps once a month.

It has been found that the guarantees made by companies installing filters have not always been as useful as intended, for the reason that the raw water was in some cases badly polluted; and although the percentage reduction of bacteria filled the guarantee, yet there still remained in the filtered water bacterial evidences of pollution. The percentage of bacteria removed may or may not be, therefore, a measure of the improvement in the water from a disease-producing standpoint.

#### SEWAGE PURIFICATION PLANTS

At the beginning of the investigation, some two-thirds of the sewage purification plants, including most of the larger ones, were found to be defective in construction or operation, or both. Municipal officials were found to have little interest in sewage purification. As a rule, it is easier to interest such officials in obtaining a pure water supply for themselves than it is to get them to purify their sewage for the benefit of others living down stream.

Failures of sewage purification plants were found to be due to ignorance and carelessness in operation and even absolute neglect, together with outgrown plants. In some cases the plants were built on wrong principles, but usually they are sufficiently correct in design to permit of securing good results if properly managed and if not worked beyond their capacity. The failure on the part of operators to understand the principles of sewage purification and the consequent failure to manage the plant properly are largely due to the fact that the engineer who designs and builds the plant is not retained long enough to test it or to instruct the future operator as to its workings. In some cases there has been left by the builder the erroneous idea that the plant is practically automatic. Little thought is given to the necessity for increasing the capacity of the plant as the sewage changes in character or increases in volume. Frequently, lack of provision for future development of the original design has made an enlarged plant difficult and expensive to secure.

Viewing the question solely from the standpoint of preventing offensive pollution of streams and aside from the matter of odors arising from the plant itself, the investigation has shown that intermittent filtration through sand or other fine material, such as crushed coke or cinders, has been the most satisfactory method. Of the twenty-two plants which at the end of the investigation were producing a satisfactory effluent, seventeen employed this type of filtration. From another standpoint, but two of the sand or fine grain filters failed to protect the stream into which the effluent was discharged; while of the coarse grain filters, eleven failed to so protect the

stream. The fine grain filters have in many cases purified the sewage to a degree which could not be expected with any of the other methods. On the other hand, two or three of the coarse grain plants have produced effluents which have entirely fulfilled the requirements of local conditions and which have been sufficiently satisfactory. In many cases, however, especially with the larger cities, it is impossible on account of the cost to use this system, and in these cases coarse grain filters if properly designed and faithfully taken care of may be used with satisfaction.

In regard to odors from the sewage purification plants themselves, aside from the character of the effluent produced, our investigation has shown that this feature is not an important one and that with a well designed plant it can be controlled by intelligent management. Odors more or less objectionable may arise from scum or from freshly deposited sludge, when the latter is exposed to the air as is done when septic or settling tanks are being cleaned. No odors need be caused from the filters whether they be of sand or other material, if the sewage is applied intermittently in suitably proportioned doses and the surfaces of the filters are kept reasonably clean.

The degree of purification necessary at a given place is dependent to a large extent upon the dry weather flow of the stream receiving the effluent and whether or not the water of the stream is used for domestic purposes below the sewage plant. In the latter case, the sewage should be purified to as high degree as possible, even though the public supply down stream be filtered, it being unjust to impose upon such water filtration plant unnecessary work. It will be seen that the supervision of a State or central authority is necessary to determine in each case how much work should be done by the sewage purification plant and how much by the water-purification plant.

#### SUMMARY

The investigation has resulted in securing in most instances the support and cooperation of local officials in the management of plants under their charge, and with this cooperation great improvement has been effected in a considerable number of plants.

The investigation has afforded a fund of valuable information for the future guidance of the State Board of Health, and for the benefit of local health officials, engineers and others who may be called upon in the future to solve problems relating to water and sewage purification.

The investigation has indicated the necessity for the continuance of systematic examinations of existing plants, in order that further improvements may be effected, and that the interest of the local officials may be permanently maintained.

The investigation has further shown that on account of the great difference in local conditions in cities and villages, it is necessary if best results are to be secured to place the control of water and sewage purification under a competent central authority with power to prescribe individual standards of efficiency for each water purification and each sewage purification plant.

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JULY 1, 1908.

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## For a National Department of Health

THE Committee of One Hundred on National Health of the American Association for the Advancement of Science is advocating the insertion in State and National platforms of a plank conveying the sentiment which it expresses as follows:

Believing that the growth, power and prosperity of the country depend primarily upon the physical welfare of its people and upon their protection from preventable plagues and epidemics of both foreign and domestic origin and from all other preventable causes of disease and death, we reaffirm the expressed view of President Roosevelt that "the preservation of the National vigor should be a matter of patriotism," and to this end we advocate the organization of all existing National public health agencies into a single National health department, with such improved status and increased powers as will give the Federal government the strongest possible control over all public health interests not now effectively conserved by the respective States.

We believe that such a move is desirable, for reasons stated by us from time to time in the past, and recommend the use of their influence to this end by our readers.

The example has been set by the Republican platform, which states that "We commend the efforts designed to secure greater efficiency in national public health agencies and favor such legislation as will effect this purpose."

## Septic Gases and Concrete

IN 1894 the City of Los Angeles, Cal., constructed an outfall sewer, 4 1-3 miles of which was circular, 40 inches in diameter, of brick with cement joints; 1 1-4 miles was of the same material 6 feet in diameter, and about 6.8 miles was of wood stave pipe. After a few years' use, the brick work in the interior of the sewer was found to be disintegrating, the cement mortar having crumbled into a powder to a depth in some places of half an inch. The first part of the sewer where deterioration was found was beyond the first siphon, where a strong odor was noticed. Rudolph Hering, who was called upon to investigate the phenomenon, concluded that the disintegration of the mortar was due to the gases given off by the septic sewage, the septic decomposition being due to the slow passage through the siphon where there was no ventilation and where deposits probably occurred; the gases being absorbed by moisture in the top of the sewer and there forming acids which attacked the mortar. Below the surface of the flowing sewage the mortar did not appear to have been affected.

On another page of this issue are cited three instances in which cement mortar in concrete appears to have been disintegrated by sewage, or at least in which disintegration took place below the surface of the liquid. In this case the cause of the disintegration does not appear to have been determined, nor is it even certain that it was due to septic sewage, although no other explanation seems to suggest itself. It is probable however, that the same explanation may fit both these cases. In the Los Angeles sewer it is probable that the amount of septic action was not great, and the effect was due to the gradual but long continued absorption of successive volumes of gas by the

moisture on the roof of the sewer; while the sewage itself did not become acid enough to affect the cement, and may, in fact, have contained enough alkali to neutralize any acid. In the septic tank, however, the sewage, and especially that at the bottom of the tank, would contain in concentrated form the products of septic action.

If this crude explanation is in general correct, there would seem to be urgent need of thorough investigation of the effect of sewage and of the gases arising therefrom upon concrete, whether this be in septic or sedimentation tanks, or in sewers. The use of concrete for large sewers has become quite general within the last ten years, and small sewers of the same material are coming into use in place of vitrified clay pipe. If there exists a real danger that these will be short-lived, this should be known at once before any more of the money of our municipalities is invested in structures which should have a life of fifty to one hundred years, and the failure of which would bring about such disastrous consequences.

## PLANS FOR SEWERAGE SYSTEMS

Rules for Preparing These, Issued by New York State Board of Health—General Plans—Profiles—Details—Specifications

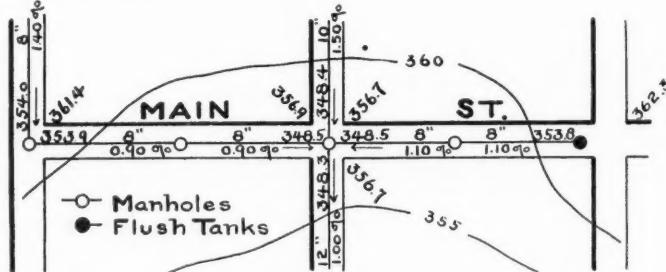
THE State Commissioner of Health of New York, Eugene H. Porter, has published, for the information and instruction of the cities of that State, rules and regulations for the preparation of such plans for sewerage systems and sewage disposal works as may be submitted to the Commissioner in accordance with recent Public Health Laws. They will be found serviceable also as indicating to city officials in other States what it is desirable that they obtain from engineers whom they employ to prepare such plans for them; and to young engineers as a guide in such work.

Following the rules of general application are given certain explanations of the requirements of the Health Department concerning treatment of sewage. In general the Department will approve of plans for the separate system of sewerage only, which system is practically a necessity if the house sewage is to be treated. Plans for treatment must provide for a clear and stable effluent, and for sufficient expansion to meet future growth.

**1. General Plans.**—General plans on a scale of not less than 300 feet to one inch, and preferably not greater than 100 feet to one inch, covering the entire area of the municipality, must accompany every application in the case of a new sewer system, or any extension or modification of any existing sewer system, unless such a general plan of the entire area of the municipality has been already submitted. These plans must have shown upon them all existing and proposed streets, the surface elevation at all street intersections and at all points where changes of grade occur, and contour lines for intervals of not less than five nor more than ten feet. The plans must also show sewers upon all streets in the municipality or the sewerage district, even if the construction of some of the sewers may be deferred. Should there be areas which, on account of the topography or for other reasons, cannot drain into the proposed system, a definite statement to this effect must be made, and the probable future drainage of this disregarded territory be discussed. The plans must also show clearly the location of all existing "sanitary" and "combined" sewers, but not of drains used exclusively for sub-soil or surface water; and the location of the disposal works and of all points where existing or proposed sewers may discharge into the streams. The magnetic meridian, title and date, and the

direction of flow and mean water elevation of the principal streams, must also be clearly shown.

**2. Lettering, Figures and Symbols.**—The lettering and figures must be of appropriate size, and of distinct outline. Surface elevations should preferably be placed just outside street lines opposite their respective positions, and at street corners, preferably in the angle outside street line, in the upper right angle if but one, and in the other angles if more than one. The elevations of all sewer invert must be shown at street intersections, at the ends of all lines, and at all points where changes in alignment and grade occur. These elevations must be clearly and distinctly written close to the manhole or flush tank, parallel with sewer line, and expressed at least to the nearest 1-10 foot. All manholes, flush tanks, catch basins, lampholes and other appurtenances must be shown upon the plans in suitable symbols appropriately "referenced" in the title. The sizes and the gradients of all proposed sewers, and of existing sewers, must be marked appropriately along sewer lines between all consecutive manholes or flush tanks, with arrows showing the direction of flow. All sewers and other appurtenances must be shown by black lines and conventional signs, and not by colors. As an example of the lettering to be used at a street intersection, the following sketch is offered:



clude within the system at the present time and in the future; the estimated, present and future population to be served; the estimated per capita rates or volume of sewage to be provided for; the extent of any provisions for storm or roof water, and the full reasons for the inclusion of such water in the system. The report should include a description of all conditions peculiar to the locality, affecting in any way the design of the system; a description of all special devices used in the design and of any special points to be observed in the maintenance and operation of the system. The report must contain a full description of the general arrangement and all special features of the proposed sewage disposal works, the reasons for the choice of the method or type proposed and a full description of the proposed operation of the plant. A full statement must be given of the capacities of the various parts of the works, the population which the works are designed to serve and the reasons for any unusual capacities adopted.

### COLLOIDS IN SEWAGE PURIFICATION

WITH all the advances made in the purification of sewage, both as a science and as an art, during the past twenty-five years, it is still true that satisfactoriness of results do not seem to be always predictable or obtainable, and there is much to be learned concerning the actual properties of sewage and the changes it undergoes during treatment. An important discovery or realization in this connection was that of the part played by colloid matter, which was discussed by Biltz and Kröhnke in 1904, and by Fowler, Ardern, Jones and Travis later. Among other experiments in connection with colloids have been those at Hampton, England, which have resulted in a clearer conception of the principles underlying the purification of sewage and of the important part played by colloids in determining the phenomena observed. Some of the information obtained at this plant is summarized briefly below.

The colloids in sewage are of an organic nature, although frequently associated with inorganic matter. They exist in unstable solution, readily passing into suspension, which change may occur either spontaneously or under the influence of outside agencies. In treating sewage, the property of coagulation under the influence of surface action is the main factor in clarification. When this is spontaneous, it takes place so slowly that its effect is hardly manifest in the comparatively limited time of passage of the sewage through the treatment area.

In the case of simple sedimentation, the only surfaces present are the tank walls, and there is, therefore, no opportunity for surface action on the bulk of the liquid. These walls, however, always become covered with adherent matter, which is at first very fine, but becomes coarser and thicker until it detaches itself by its own weight and falls to the bottom. This deposit is composed of coagulated colloid matter combined with a certain amount of suspended solids. If the submerged surface area is increased by the insertion of slabs or partitions, this effect is proportionately increased, as is the reduction of contained colloids in the effluent.

In the case of septic tanks, the bottom sludge is from time to time, through the generation of gas, either raised bodily or dispersed throughout the liquid in fine particles, and these moving particles collect the colloid matter and remove it from the liquid. The amount of col-

loid matter thus removed therefrom is dependent upon the extent to which these sludge particles move up and down through the liquid.

When sewage passes through contact or percolating beds the greatest influence of the colloid matter in purification becomes effective. When the liquid is in contact with or slowly passing over the coarse grains of these filters, it is exposed to a large surface area and the colloids in the liquid are absorbed in or adhere to such surfaces. A first deposit of colloids encourages further deposition and also absorbs organic matter which is in true solution as well as a part of the ammonia and salts. The completeness of this absorption depends upon the concentration of the colloids in the sewage, the degree of stability of their solution, the intimacy of the surface contact and other factors. The first two vary with the character of the sewage treated, but in domestic sewages this is determined more by the effect upon the sewage of the conduit system than upon the chemical constitution of the sewage. The intimacy of surface contact depends upon the size of the filter particles, the smaller these particles the larger the area of surface available to the liquid. The colloid matter thus deposited is subjected to physical, chemical and biolytic actions. If the filter material is coarse, allowing free access of air, colloid deposits change from a glutinous to a granular nature, and are readily detached and washed out of the bed. If the material is fine, allowing but slight air current, such change is very slow, and the deposit remains in the bed for an indefinite time.

In the case of chemical precipitation not only are the suspended matters removed, but some of the colloids also, as the precipitate produced presents a large surface area for the absorption of colloids. It is not possible in practice to coagulate more than a small proportion of the colloids by the addition of electrolytes.

In the land purification of sewage, the soil, as has long been known, not only removes salts from solution, but forms absorption compounds with the organic matter in the sewage, which is explained by the colloid nature of a considerable amount of such matter.

In concluding a statement of the above ideas, of which this is an abstract, Mr. J. H. Johnston, chemist and bacteriologist of the Hampton Urban District Council, says: "If the fact that surface action was the cause of the removal of the organic and other impurities in the case of land treatment had been borne in mind when artificially prepared treatment areas were substituted for land, the correct explanation of the cause of the clarification obtained by the new method could hardly have been overlooked. It was thus seen that there is a parallelism running through all the methods of sewage treatment, due to the colloid nature of the liquid, and that the known properties of the colloid state provide a clear explanation of the mechanism of the clarification process. A correct interpretation of this process is of the utmost practical importance, as otherwise no design for a purification plant could be drawn up with any assurance of success in actual practice."

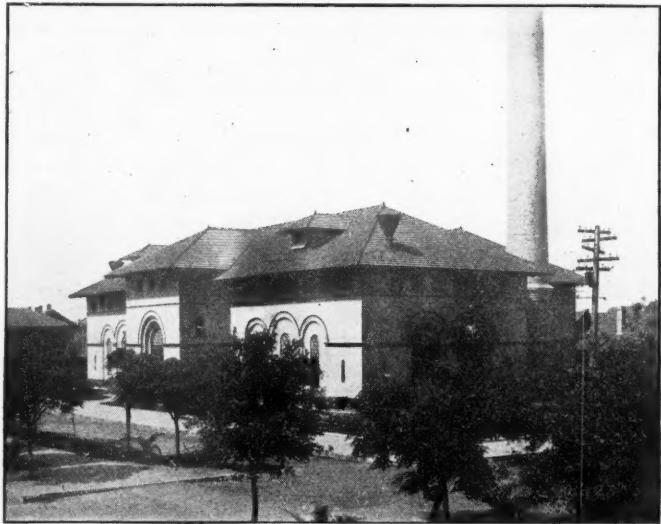
## SEWERAGE AND DRAINAGE OF NEW ORLEANS

General Description of Plans—Amount of Same Carried Out to Date—Pumping Plants—Efficiency of Plants—House Connections—Drainage Canals—Construction Details—Cost

FOR many years it was considered to be impracticable to construct a system of sewers in New Orleans, La., partly because of the nature of the soil and partly owing to the fact that nearly the entire city lies below the level of the river, in some places a maximum of about 20 feet. A number of years ago a private corporation obtained a franchise for a sewer system, but after working upon the construction a few years they went into the hands of a receiver. The city then took up the problem and bought the sewers which this company had already constructed, which included the largest mains in the city.

A topographical study of the city showed that it could be divided into several natural drainage areas, in each of which could be operated a gravity system with a low collection point but without a gravity outlet. In each such drainage section there is located a pumping plant automatically put into and out of action by the rise and fall of the drainage water. These plants lift the water to a sufficient height, generally 8 to 10 feet, to carry it by gravity across the next drainage area toward a central pumping station, at which all the sewage is discharged through force mains to the river. The shallowest sewers are five feet below the surface and the deepest twenty-four feet.

free from moisture. So far only one pump has been installed in each of the first-lift stations, but others will be added as the system is extended; one object of this plant being to give an opportunity for testing out the pumps and allow for changes in other pumps if desirable.

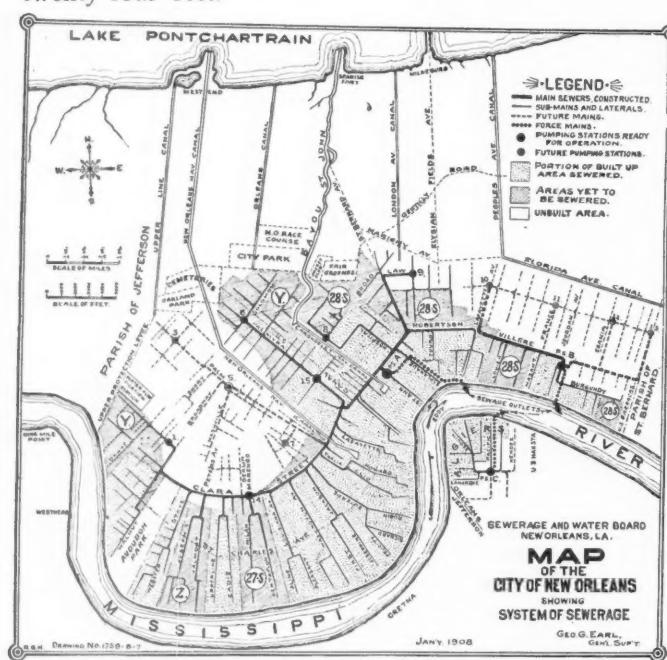


CENTRAL SEWAGE PUMPING STATION, A

There are two steam-driven high-lift stations to force the sewage to the river, with lifts of 30 to 55 feet, and one electrically driven station. Station A is the largest of the high-lift stations and it is here that all electric power is generated for operating the other stations. This station has been in operation about twenty-one months, but the plant has not yet been formally tested or accepted by the city because of some minor changes which the contractors must make, and no data were obtainable regarding duty performance.

The boiler room of this station contains four 250-horsepower Heine boilers, water for which is pumped by a Deane pump from tanks supplied with artesian well water. There are two generators driven by 225-horsepower cross-compound engines. Two horizontal centrifugal pumps driven by triple-expansion engines discharge the sewage through force mains to the river. These pumps each have a capacity of 60 cubic feet per second with a 55-foot lift. So far only one pump and one generator have been necessary in the operation of the work and these have not been run to their full capacity. All the sewage pumping machinery was furnished by the Camden Iron Works.

Although the sewers extend in some cases to a depth of twenty-four feet, no serious difficulty has been met with in their construction. Many of the shallow sewers have been constructed with only skeleton sheathing of the trenches, but in some of the deeper ones it has been necessary to put in close sheathing and even this has not prevented settling of the adjacent ground in a few local-



SEWERAGE SYSTEM, PLANNED AND CONSTRUCTED

The accompanying map shows four underground first-lift and two second-lift stations, and two main stations which have already been built. All the first-lift stations are below ground and all the second-lift stations above ground. The centrifugal pumps in these are operated by automatically controlled electric motors which receive their power from central station A. A visit to both first and second-lift stations showed their interiors to be



UNDERGROUND SEWAGE PUMPING STATION  
Second-lift Station, No. 15

ties. At certain depths stumps have been found, but were cut through or otherwise removed without seriously interfering with the work. In some localities and depths a peculiar material is found which cannot be thrown from the shovels unless these be wet each time before filling the shovel.

Most of the sewers have been constructed by contract; but one of the bids for the last section was \$300,000 more than the engineer's estimate and the Board decided to construct this section themselves, and it is now believed that the work will be completed by them for less than the estimate.

The Algiers outfall was completed last year, and that section of the city now has improved water and sewerage service practically throughout. The outfall is a 20-inch cast-iron main, a part of which was laid in 1906 under contract. The outer 396 feet, through the levee and into the river, was constructed by day labor in 1907 at a cost of \$5,984. Of this 324 feet was of bell and spigot pipe laid in trench; the remaining 72 feet had flange joints and was supported by piling. At the outer end is a quarter-bend and a straight joint 12 feet long terminating in a one-eighth bend turned down stream. On the up-stream side of the piling which supports this outfall is a line of protection piles whose tops extend two feet above high water. Two concrete collars extending about 1.5 feet on each side of the excavated trench were built around that part of the pipe under the levee, to prevent seepage water following the pipe.

About 275 miles of sewers have now been constructed, this including most of the mains which are of various diameters up to six feet. The stations and force outlets as above described also are practically completed. There yet remains to be built about 100 miles of sewer, none over 27 inches in diameter. It is expected that the entire system will be completed by the end of next year.

The total cost of the system to January 1 of this year has been \$4,447,123. It is estimated that it will require \$947,327 to complete it. These figures include the work in Algiers, a section of the city lying on the opposite side of the Mississippi, in which there are 12 1-2 miles of sewers.

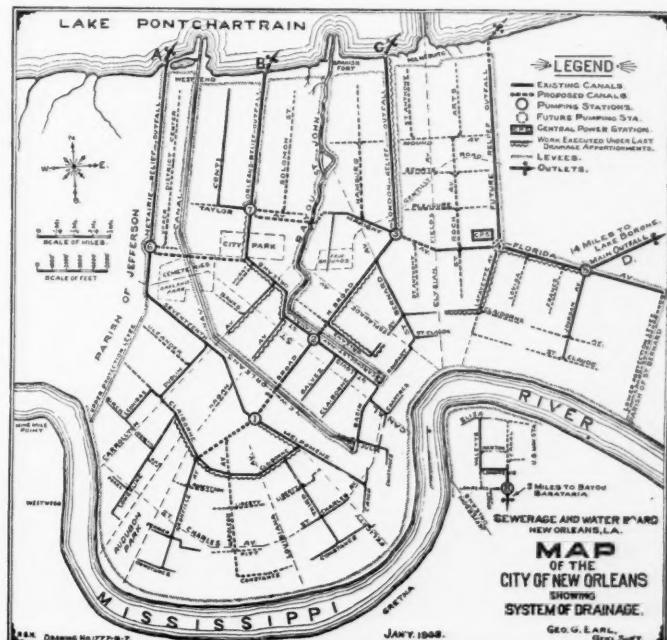
Although from 6,000 to 7,000 premises are said to re-

ceive the service of the New Orleans Water Works Company, only about 1,200 sewer connections have as yet been made; this in spite of the fact that the main sewage pumping station has been in operation almost two years and the sewers giving satisfactory service. Owing to the unsatisfactory results and expense connected with permitting plumbers generally to make sewer connections, it was decided in April, 1907, that the Board should establish a plumbing department for this purpose. The charges of the Board for making such connections in the business section is \$50, and in the residence section \$25; these having been found to be the approximate average cost of the work. The Board carries the connection to the property line. The payments are to be refunded, without interest, to the property owners when the Board shall be so situated financially as to be able to do so; the Board not having now available the \$2,000,000 or \$3,000,000 required for this work.

In connecting the houses with the sewers no main traps will be used, but a continuous untrapped pipe will be carried from the sewers through the house to a vent above the roof. With the ample ventilation thus furnished it will be unnecessary to leave openings in the manhole covers, which will greatly reduce the amount of sewage which would otherwise need to be pumped when the streets are flooded. To provide against the disablement of any of the pumping stations, overflows to the drainage system and by-passes at intermediate pumping stations have been provided so that the sewers will not be put out of service by back water.

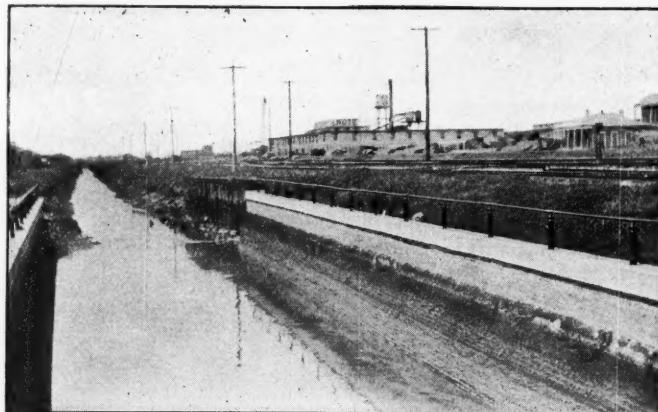
## DRAINAGE

The Sewerage and Water Board, which has charge of the sewer work above referred to, has charge of the drainage system also. Work on this was started several years before the formation of the present Board and is being carried to completion by it; although it has ceased temporarily because of the failure to sell bonds for that purpose. The drainage canals are chiefly for the purposes of carrying off the surface water and draining



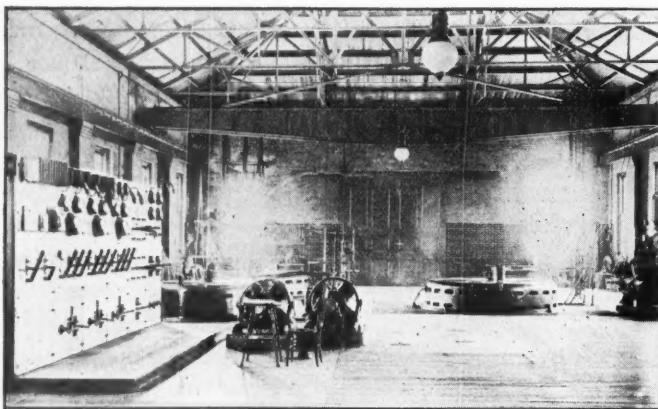
the ground water to a lower level. The surface water at times amounts to as much as 9 inches in 16 hours over an area of 20 square miles. While this system is by no means complete, it has already demonstrated its usefulness by removing this amount of water in 52 hours, a work which occupied seven to nine days with the former facilities.

The drainage system is operated by a central electric power station where power is generated for the operation of the various sub-stations. In this central station oil is used as a fuel under the boilers. When first used the oil was obtained at 86 cents a barrel, but the price has risen until now \$1.35 is asked; and \$1.25 was paid a few months ago.



MASONRY LINED AND UNLINED DRAINAGE CANAL

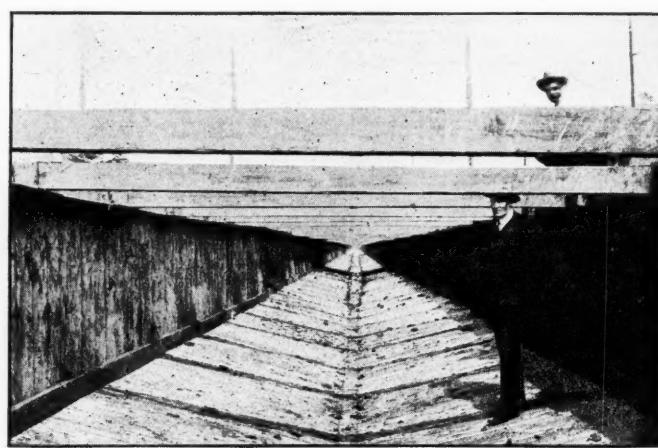
wood sub-channels. Eventually all the drainage canals will be masonry-lined and most of them covered over. Those already so completed range from 25 feet wide by 9 feet deep, with the bottom 15 feet below the surface, down to 36-inch pipe. The newer of the covered canals have the arches of reinforced concrete; but the older ones were constructed with I-beam and arch roofs. It



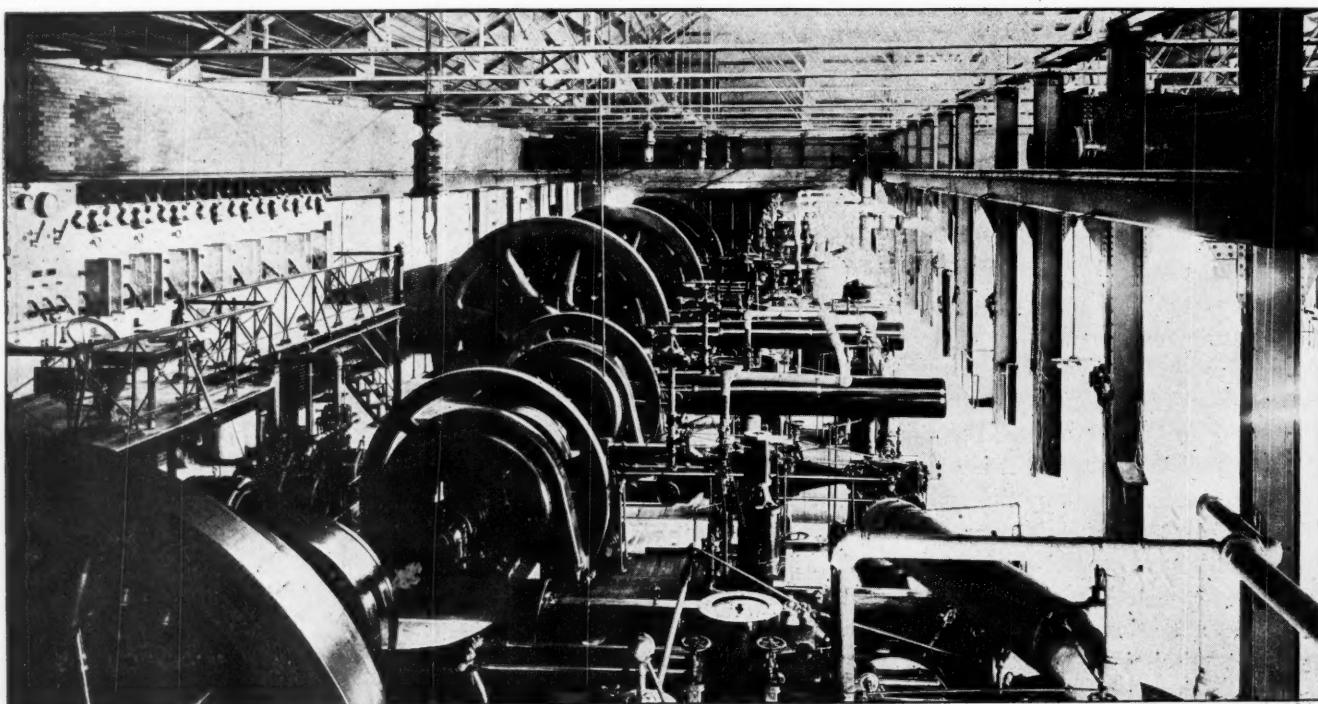
DRAINAGE PUMPING STATION NO. 2

Most of the sub-stations are intended to be operated intermittently as occasion required, but two of them are in continuous operation. Instead of using electric power in these, producer gas engines have been installed using anthracite coal as fuel.

There will be in all about 103 miles of drainage canals, most of which are already in service. About 20 miles of these are masonry-lined and five wood-lined or with



TEMPORARY WOODEN LINING OF DRAINAGE CANAL



CENTRAL POWER STATION, DRAINAGE SYSTEM



SLOUGHING BANKS ON UNLINED DRAINAGE CANAL

has been found that the iron in the latter was rapidly deteriorating and the beams are now all being covered with cement. Metal preservatives were tried at first but have not been successful. There are 80 miles of low-level canals and 23 miles of tide-level outfall canals. At present these discharge into Lake Ponchartrain, but eventually a 14-mile main outfall will be constructed to Lake Borgne. Already more than \$5,400,000 has been spent on the drainage system and it is probable that six millions more will be required for its completion.

Construction of the sewerage and drainage systems has not only improved the health conditions of the city, but has made it possible to use basements under buildings where this formerly was impracticable.

The tax which is levied each year to pay the interest on the bonds issued to pay for these enterprises amounts to about \$750,000. Instead of issuing the entire twelve millions of bonds at one time and paying interest on the entire amount, the Board has issued the bonds from time to time as the money has been required and the surplus of the revenue thus saved from interest payments has been used for actual construction. This has resulted in their being able to perform 16 1-2 million dollars' worth of work instead of the 12 million dollars for which the bonds were issued.

#### Bureau of Municipal Information

THE table on pages 7, 8 and 9, giving statistics concerning night soil collection and disposal, is an illustration of the work done by the American Society of Municipal Improvements in collecting information for its members. This it does through the medium of a Clearing House of Municipal Information, which is in charge of the Secretary of the Society. Upon receiving a request from a member for information concerning a given subject, the Secretary first ascertains whether such has been collected previously, and if it has not he proceeds to obtain it, generally by direct inquiry of the city officials most likely to possess it. This service is rendered free of charge to members, but to members only, since the expense is borne by the society. The chief advantages are: The greater facilities possessed by the Secretary for obtaining information than by most of the members, and the reduction to a minimum of the requests for such information and the resulting demands made upon the time of city officials. When the Clearing

House has come into general use, it should have on hand and at once available much of the information called for; and it is hoped that its increased use by the members and the rapid growth of the society will shortly bring this about.

#### Septic Sewage and Concrete

A GREAT many, if not the majority, of septic tanks constructed in this country have had concrete as their principal, if not sole, material. A few engineers have at intervals suggested the possibility of some injurious effect of the sewage upon the concrete, but little serious attention appears to have been paid to this question, largely, we suppose, because of the fact that sewers have for years been constructed of this material or of brick with cement joints, without any such effect having been observed therein. Recently, however, at least three instances have come to light in which damage has apparently been caused to concrete by septic sewage. In one case an excavation was made along one wall of a concrete septic tank which had been in service between four and five years, and the concrete in this wall was found by W. S. Macharg, who was directing the work, to be so weak that the wall was overthrown by the pressure of the sewage in the tank after the earth had been removed from its exterior. The concrete is said to have been well made of good materials, and no previous indication of deterioration had been noticed. It received the domestic sewage of a large manufacturing establishment, which contained practically no trade wastes from the shops.

W. S. Shields has recently found the concrete used in constructing two other septic tanks built by him about five years ago to have apparently become porous, for which no cause can be assigned except the action of the contained sewage. One of these tanks extends about five feet above the surrounding ground, and when put into service appeared to be perfectly tight. About two years ago, however, seepage through the walls was noticed, and recently several considerable leaks have been found. The other tank was cleaned out recently, and the surface of the concrete forming the bottom was found to be so loose that it could easily be removed with a shovel. These two tanks receive house sewage only, into which no trade wastes are discharged.

These instances are, of course, not sufficient proof that septic sewage injures concrete, it being not even certain that this was the cause of the deterioration noticed in these special cases. The far-reaching effect of such an action, however, if it exists, makes it important that this should be determined as soon as possible, in order that the necessary precautions may be taken in future constructions. In connection with this, it may be recalled that a few years ago the long outfall sewer of Los Angeles, Cal., which was constructed of brick laid in cement, and in which the sewage remained so long as to become septic, was found to be deteriorating in the upper portion, which effect was attributed to acids formed by the absorption in the moisture which seeped through or collected upon the arch of the sewer of gases given off by septic sewage.

## MUNICIPAL BOND SALES DURING MAY

NAME OF CITY	Esti- mated Popu- lation	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)			Bonded Debt	Sinking Fund	NET BONDED DEBT		Tax Rate per \$1,000 Ass'd Value	BOND SALES, MAY, 1908				
		Total	Per Capita	Ratio of ass'd to actual value			Total	Per Capita		Term of Years	Amount	Interest	Price	
Fairfield, Cal.										1-40 ser.	\$20,000	5% s.a.	Par.	
Alamosa, Col.										10	37,938	6% s.a.	Par.	
New Britain, Conn.	43,000	\$36,000,000	\$210	75% 1,118 67%	\$2,305,000	\$170,000	\$2,135,000	\$49.00	\$16.50	10	300,000	4% s.a.	\$100,133	3.992
New London, Conn.	20,000	22,364,083	1,118	67%	1,190,500	26,500	1,170,000	58.50	16.00	10	100,000	4% s.a.	98.139	3.973
Stonington, Conn.										18-1-6	50,000	3 1/2% s.a.	98.139	3.973
Waterbury, Conn.	73,000	80,000,000	1,096	69% 250 65%	2,102,000	181,000	1,921,000	25.00	14.70	3-4 ser.	100,000	4% s.a.	98.00	4.148
Athens, Ga.	20,000	5,000,000	250	65%	350,000		350,000	17.50	12.50	30	75,000	5% s.a.	104.75	4.703
Fitzgerald, Ga.										30	20,000	5% s.a.	102.0725	4.867
Boise City, Ida.	25,000	17,500,000	700	40%	245,000		245,000	9.00	15.00	1-10 ser.	50,000	7% s.a.	Par.	
Batavia, Ill.										15 1/2 avg.	26,000	4 1/2% s.a.	100.673	4.44
Hartley, Ia.	1,200	1,000,000	833	50%	17,500		17,500	14.00	20.00	10-20 opt.	12,000	5% s.a.	100.416	4.946
Mason City, Ia.										34,000		Par.	101.161	
Spirit Lake, Ia.										22,000	5% s.a.			
Concordia, Kan.	5,250	300,000	57	100% 400 65%	50,000		50,000	9.00		9 1/2 avg.	32,000	5% s.a.	100.625	4.914
Carrollton, Ky.	3,000	1,200,000	400	65%	14,000	2,000	12,000	4.00	75.00		20,000	5% s.a.	103.505	
Eden, Me.	6,000	3,580,403	596	100% 100% 100%	115,500	760	114,740	19.00	20.00	25	27,000	4 1/2% s.a.	100.71	3.944
Gardiner, Me.										70,000	4% s.a.	101.00	3.936	
Belmont, Mass.										10,000	4% s.a.	109.037	3.51	
Gloucester, Mass.	30,000	22,147,232	738	100% 708	1,745,126	147,834	1,597,292	53.00	17.70	13 avg.	40,000	4% s.a.	102.61	3.744
Lawrence, Mass.	76,616	54,246,294	708		2,088,300	135,693	1,952,607	25.00	16.40	1-10 ser.	80,000	4% s.a.	101.915	3.613
Marion, Mass.	1,010	2,541,610	2,501		26,750		26,750	10.80		16 1/2 avg.	100,000	4 1/2% s.a.	110.839	3.627
Pittsfield, Mass.										10 1/2 avg.	132,000	4% s.a.	103.79	3.626
Salem, Mass.	38,000	31,451,580	827	100% 100%	1,209,800		1,209,800	31.00	17.80	30	48,000	4% s.a.	103.79	3.626
Taunton, Mass.										9 1/2 avg.	190,000	4% s.a.	103.79	3.626
Watertown, Mass.										20,000	4% s.a.	Par.	3.585	
Holland, Mich.	10,000	8,000,000	800	70% 370 66%	183,500		183,500	18.00	16.50	3 1/2 avg.	12,000	4% s.a.	103.31	3.585
Manistee, Mich.	14,000	5,264,320	370	66%	235,200	25,231	109,969	7.00	31.00	16 1/2 avg.	9,225	4% s.a.	102.58	3.601
Mt. Clemens, Mich.										5-9 ser.	16,200	4 1/2% s.a.	100.363	4.876
Traverse City, Mich.										20	15,000	4 1/2% s.a.	100.161	4.473
Chisago Lake, Minn.										2 avg.	32,011	4 1/2% s.a.	105.27	4.11
Fountain, Minn.										1,300	5% s.a.	Par.	102.58	
Grimstad, Minn.										2,000	6% s.a.			
Staples, Minn.										6,000	6% s.a.	101.25		
Wabasso, Minn.	500	125,000	250							4,000	6% s.a.	Par.		
White Bear, Minn.										7,000	5 1/2% s.a.	103.354	4.738	
Laurel, Miss.										8,500	5% s.a.	Par.		
Deshler, Nebr.	500	750,000	150	13% 13%	15,000		15,000	30.00	41.00	5-20 opt.	30,000	6% s.a.	100.316	5.926
Concord, N. H.										20	225,000	3 1/2% s.a.	100.19	3.486
Camden, N. J.										20	350,000	4 1/2% s.a.	105.00	4.156
Cape May, N. J.										30	160,000	4 1/2% s.a.	105.00	4.156
Park Ridge, N. J.										2	105,000	5% s.a.	103.00	4.81
Passaic, N. J.	43,000	26,892,714	624	100% 100%	762,750	7,501	755,249	17.00	14.10	20	45,000	5% s.a.	Par.	
South Orange, N. J.										84 avg.	30,000	6% s.a.	101.418	4.293
Bronxville, N. Y.	1,300	1,834,000	1,411	100% 100%	64,000		64,000	49.23	15.00	38 1/2 avg.	48,000	4 1/2% s.a.	105.271	4.222
Corinth, N. Y.										2,000	4 1/2% s.a.	Par.		
Gloversville, N. Y.	20,000	12,472,225	624	60% 567 75%	634,250	55,250	579,000	28.00	12.00	2 1/2 avg.	7,000		100.357	
Lancaster, N. Y.	4,700	2,666,664	567	75%	36,000		36,000	7.00	17.50	12-41 ser.	150,000	4 1/2% s.a.	100.218	4.386
Little Falls, N. Y.	12,250	4,425,740	301	65% 65%	379,000		379,000	30.93	17.82	10-20 opt.	50,000	4 1/2% s.a.	100.07	4.29
Mamaroneck, N. Y.	5,000				215,000		215,000	43.00	7.35	5-29 ser.	35,000	4 1/2% s.a.		
Medina, N. Y.										5-24 ser.	20,000	4 1/2% s.a.	100.136	4.586
Newburgh, N. Y.	26,500	25,000,000	943		585,899	14,269	571,630	21.57	22.40	5-18 ser.	12,000	5% s.a.	100.10	4.956
Nyack, N. Y.										5-22 ser.	52,500	4 1/2% s.a.	100.57	4.381
Oneida, N. Y.	8,800	5,000,000	568	66 1/2% 400 94%	350,000		350,000	39.77	28.17	1-10 ser.	18,000	4 1/2% s.a.	100.15	4.585
Philadelphia, N. Y.	1,000	400,000	400	94%	37,700		37,700	37.70	8.50	5-10 ser.	1,967	4 1/2% s.a.	Par.	
Pleasantville, N. Y.										5-29 ser.	3,000	5% s.a.	Par.	
Troy, N. Y.	76,000	54,250,172	714	100% 100%	3,541,679	85,779	3,455,900	45.47	17.66	5-8 ser.	3,500	5% s.a.	100.53	4.944
Utica, N. Y.	70,000	37,000,000	528	100% 100%	1,300,000		1,300,000	1.85	9.80	1-16 ser.	20,000	4 1/2% s.a.	101.941	4.226
Warwick, N. Y.	1,000	818,475	430	50% 1,397,060	28,000		28,000	14.00	7.88	1-6 ser.	80,000	4 1/2% s.a.	101.67	4.301
White Plains, N. Y.	14,500				1,397,060		1,397,060	96.35	10.51	1-6 ser.	25,000	4 1/2% s.a.	101.104	4.967
Yonkers, N. Y.	68,000	60,019,750	883		5,018,682	299,600	4,719,082	60.40	24.48	1-10 ser.	11,643	5% s.a.	100.187	4.466
Goldsboro, N. C.	10,000	376,263	3,700		168,000	57,210	110,790	11.00	5.00	20	4,000	4 1/2% s.a.	110.81	4.354
High Point, N. C.										30	54,000	5% s.a.	110.81	4.354
Westhope, N. D.										30	30,000	4 1/2% s.a.	101.4011	4.416
Alliance, O.	15,000	12,467,370	831	33 1/2% 831 33 1/2%	578,190		578,190	38.54	30.20	20	20,000	6% s.a.	101.05	4.934
Anna, O.	600	450,000	75	50% 1,000 33 1/2%	1,500		1,500	2.50	.60	1-3 ser.	4,000	5% s.a.	101.375	
Bryan, O.	3,500	3,500,000	1,000	33 1/2% 380 33 1/2%	111,000	2,000	109,000	31.00	4.94	1-4 ser.	5,100	5% s.a.	100.72	4.621
Cadiz, O.	2,100	4,000,000	380	33 1/2% 833 33 1/2%	48,300		48,300	23.00	31.60	15	14,000	5% s.a.	101.307	4.417
Cambridge, O.	12,000	10,000,000	833	33 1/2% 10,000,000	317,000	6,000	311,000	25.92	3.52	15	1,500	5% s.a.	100.60	5.607
Dennison, O.										15	10,000	5% s.a.	107.28	4.292
Dresden, O.										15	13,800	4 1/2% s.a.	101.623	4.1785
Fremont, O.										15	47,923	4 1/2% s.a.	100.50	4.391
Hamilton, O.	30,000	22,000,000	733	50% 1,064,505	54,684	1,009,821	33.66			15	24,000	4 1/2% s.a.	106.083	4.372
Hamler, O.										15	25,000	4 1/2% s.a.	103.76	
Lakewood, O.	10,000	12,000,000	1,200	37% 1,073,044	100,504									

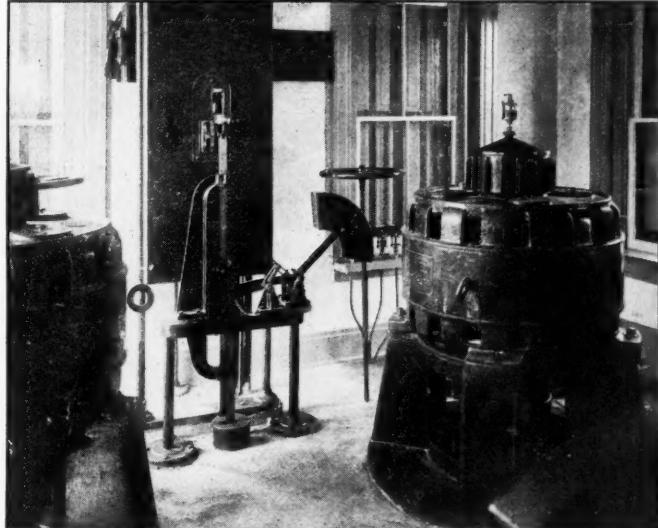
**MUNICIPAL JOURNAL AND ENGINEER**  
**MUNICIPAL BOND SALES DURING MAY—Continued.**

NAME OF CITY	Estimated Population	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)			Bonded Debt	Sinking Fund	NET BONDED DEBT	Tax Rate per \$1,000 Ass'd Value	BOND SALES, MAY, 1908				Basis		
		Total	Per Capita	Ratio of ass'd to actual value					Total	Per Capita	Term of Years	Amount			
Marion, O.	20,000	\$10,663,500	533	66%	\$509,013	.....	509,103	25.00	15.00	3 1/2 avg.	\$2,000	4% s.a.	Par.		
Massillon, O.	15,000	18,000,000	1,200	30%	195,504	41,772	153,732	10.25	31.40	1 1/2 avg.	1,950	4% s.a.	Par.		
New Lexington, O.	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 1/2 avg.	24,500	4% s.a.	Par.		
Newton Falls, O.	1,000	912,000	912	33%	20,000	488	19,512	19.00	2.88	2 1/2 avg.	3,050	4% s.a.	100.303	3.856	
Ravenna, O.	5,000	.....	.....	.....	200,802	15,342	185,460	37.00	28.8	4-23 ser.	45,000	4% s.a.	102.682	4.112	
Reading, O.	.....	.....	.....	.....	.....	.....	.....	.....	.....	8 1/2 avg.	7,500	4% s.a.	Par.		
Rockford, O.	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,000	4% s.a.	102.13	4.29		
Springfield, O.	48,000	35,000,000	729	20%	1,014,827	.....	1,014,827	21.14	27.30	1-10 ser.	10,000	4% s.a.	101.103	4.248	
Youngstown, O.	60,483	56,882,000	940	50%	1,269,112	209,167	1,059,945	17.25	29.42	2 1/2 avg.	3,123	5% s.a.	100.57	.....	
Chickasha, Okla.	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,100	5% s.a.	102.347	4.512		
Ambridge, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	50,000	4% s.a.	106.81	4.027		
Avalon, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,957	5% s.a.	100.894	4.637		
Bellevue, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,968	5% s.a.	101.422	4.425		
California, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,925	5% s.a.	101.894	4.41		
Mt. Oliver, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,000	5% s.a.	101.937	4.304		
Pen Argyl, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,825	5% s.a.	101.061	4.493		
Smethport, Pa.	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,225	5% s.a.	102.005	4.376		
Woonsocket, R. I.	33,000	15,875,450	481	67%	3,008,000	453,344	2,644,655	80.00	18.00	16 avg.	1,415	5% s.a.	101.766	4.449	
Beaumont, Tex.	25,000	15,000,000	600	66 1/2%	674,800	135,000	539,800	21.00	13.50	2 1/2 avg.	8,030	5% s.a.	101.992	4.38	
Paris, Tex.	18,000	12,000,000	666	65%	423,000	105,975	318,025	16.00	9.50	5-30 opt.	20	60,000	5% s.a.	102.876	4.775
Newport News, Va.	.....	.....	.....	.....	.....	.....	.....	.....	.....	14 1/2 avg.	25,000	5% s.a.	101.016	4.901	
North Yakima, Wash.	15,000	5,309,000	353	.....	108,000	.....	108,000	7.00	36.25	10 avg.	10,000	4% s.a.	101.07	4.429	
Stevenson, Wash.	400	160,000	400	60%	5,000	.....	5,000	12.00	5.00	1-20 ser.	75,000	4% s.a.	101.318	4.401	
Moundsville, W. Va.	8,000	6,000,000	750	45%	10,000	.....	10,000	1.25	4.50	11-30 ser.	100,000	5% s.a.	102.33	4.70	
Cashton, Wis.	750	425,000	553	88%	.....	.....	.....	14.5	14.50	16 avg.	15,000	4% s.a.	100.066	4.412	
Fennimore, Wis.	1,200	1,000,000	833	75%	30,000	.....	30,000	25.00	12.00	9 1/2 avg.	15,000	4% s.a.	103.90	5.421	
St. Croix Falls, Wis.	600	1,500,000	2,500	71%	14,000	.....	14,000	23.00	.....	10-20 opt.	40,000	5% s.a.	97.689	4.149	
Douglas, Wyo.	1,600	1,300,000	812	50%	17,000	6,000	11,000	6.00	15.00	10-30 opt.	25,000	5% s.a.	101.01	4.92	
Sheridan, Wyo.	10,000	3,030,300	303	33 1/2%	185,000	.....	185,000	18.50	11.00	10-20 opt.	100,000	4% s.a.	102.516	4.682	

**SEWAGE PUMPING AT DAYTON**

THE City of Dayton, Ohio, discharges its sewage into the Great Miami River, and ordinarily this discharge is by gravity. During winter or spring freshets, however, the river rises to such height that levees have been constructed to prevent the flooding of the low lands of the city, and during high water the sewer outlets are submerged, and the sewer system would be inoperative were not some method employed for pumping or otherwise lifting the sewage. The city has in the past employed both steam pumps and pneumatic ejectors, but several recent installations for this purpose have employed electricity as a motive power, the chief advantage of this being the instant availability of this power from the central station. Three stations have so far been constructed in as many sections of the city. The first is equipped with two vertical 2,500-gallon Brooks submerged centrifugal pumps, geared to 20-horsepower, horizontal, three-phase, sixty-cycle Westinghouse motors. Another station has three units, and the third station two units, each of these consisting of a double-section, vertical, submerged, 4,500-gallon Brooks centrifugal pump, directly connected to a 40-horsepower vertical type, three-phase, sixty-cycle, 2,080-volt Westinghouse motor.

At the first of these stations the units are started and stopped by standard oil switch compensators, which are operated by hydraulic pistons controlled by float switches. The lift here is variable, averaging about twenty feet. The discharge is through a check valve at a point below extreme high water. The operation of the pumps is entirely automatic, it being necessary only to inspect them occasionally and keep the oil receptacles filled. When the river rises the sewer outlets are closed and the current is turned on, after which the pumps cut in and cut



INTERIOR OF LEHMAN STREET STATION

out automatically with the rise and fall of the sewage in the pump pits.

At the two stations containing the larger pumping plants, the starting apparatus consists of floats which operate the valves on a hydraulic piston, using water under pressure from the city mains. When the float rises this piston raises the lever on a Westinghouse auto-starter to the starting position, at the same time rotating an arm carrying a heavy counterweight, which, by the time the motors have picked up speed, falls and drops the lever to the running position by means of a pawl. When the float falls, the reverse motion given to the counterweight moves the lever to the cut-out position.

So far, the pumping capacity has been more than ample. On one occasion of high water one of the two larger pumping plants handled the sewage, reaching it by the operation of one pump only, and this running but three minutes out of each ten.

## NEWS OF THE MUNICIPALITIES

Divers Subjects of General Interest and Their Treatment by City Councils and Officials—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

### ROADS AND PAVEMENTS

#### Street Opening Plans in Baltimore

Baltimore, Md.—The Commissioners of Street Openings are planning to place a large territory in the Annex on a higher tax-paying basis. The section to be improved is a large part of North Walbrook, Forest Park and West Arlington. To accomplish the result, it will be necessary to lay macadam paving through the territory connecting the streets with the new bituminous pavement on Tenth street. One important fact that has thus far hindered the Commissioners from taking up the improvement has been that part of it, the Liberty road, is a private turnpike owned by the United Railways. This street will probably be dedicated to the city in return for a perpetual franchise to operate cars. The effect on the tax rate will be to change it from the rural 65-cent rate to two-thirds of the full city rate.

#### Severe Penalties Specified for Delays

Dallas, Tex.—The contract awarded the Texas Bitulithic Company for paving Exposition avenue contains clauses authorizing the City Engineer to put unusually severe penalties on the contractor in case of his failure to keep his agreements. For failure to complete construction within the specified time the penalty is \$100 a day. In the maintenance contract there is a clause which compels the company to make needed repairs on five days' notice, under penalty of a fine of \$25 for every day the repairs are neglected.

#### Municipal Asphalt Plant Started

Indianapolis, Ind.—The city's asphalt plant started on June 17, sending out about sixty boxes of paving material—enough for 300 square yards of surface. Samuel R. Murray is the superintendent of the plant and James Mack has charge of the street gang. A second street gang will be organized, so that the plant can turn out a larger daily product and reduce fixed charges. The bare cost of the plant was \$15,500 and the equipment of tools, rollers, wagons, etc., bring the cost up to almost \$25,000. The works are situated at East New York street and the Big Four tracks. The movement for a municipal plant dates back seven years, but nothing definite was done about it until last year.

#### Eighteen Million Dollars for State Roads

Stockton, Cal.—The notable address made before the Good Roads Congress was that by Governor Gillett, who declared in favor of an extensive system of State roads, for which he would issue bonds of the State to the necessary amount, about \$18,000,000. His plan, which has been carefully worked out by State Engineer Ellery, is to build macadam highways thirty feet wide from Redding to Los Angeles, also through the Sacramento valley from Tehama to Vallejo, into the Santa Clara valley, by way of Niles, and to Oakland and San José, through the Salinas valley, along the coast north to Humboldt and south to San Diego. This great project covers 3,000 miles of roadway, and would form main thoroughfares, to which county systems would connect. The cost per mile for the roads would be from \$3,000 to \$5,000.

#### Extensive Sidewalk Improvements Ordered

Syracuse, N. Y.—Exclusive of the walks ordered in June by the Common Council, the records show that since they began in the spring the Aldermen have adopted ordinances involving the construction of more than seventy miles of sidewalks. It is calculated that this long stretch is about one-eighth of all the sidewalk mileage in the city, and approximately five times the amount of sidewalks constructed last year.

#### Inferior Sidewalks Laid by Private Contract

Portland, Ore.—Hereafter no permits to do private work on streets or to lay cement sidewalks will be granted by the City Council without first being investigated and recommended by the City Engineer. It has developed that much inferior work is being done under private permits, and especially on sidewalks. Mayor Lane has called the attention of the Council to the matter. He said he had been informed that there were not sufficient inspectors in the city engineering department to inspect all work done by contract by private permits, and that it would take at least 100 inspectors to properly handle the work. He said one contractor had agreed to lay sidewalk for a property owner at much less cost if the latter would waive inspection by the city. He believed the contractor desired this so he could lay an inferior walk.

#### Congress Blamed for Bad Streets

Washington, D. C.—Engineer Commissioner Jay J. Morrow, commenting on an alleged statement of Representative Hepburn, of Iowa, that there was not a "half a mile of good street pavement in Washington," states that, in his opinion, the pavements of Washington compare favorably with those of any other city. He says, however, that the life of asphalt pavements is about twenty years, and most of those in the city were laid that length of time. The Commissioners have asked Congress for several years for increased appropriations for resurfacing these pavements. It has not been until lately that their requests have been granted.

#### Will Lay Scoria Block

Washington, D. C.—The District Highway Department has commenced laying a "scoria block" pavement in Massachusetts avenue, northwest between Fourth and Ninth streets. This type of pavement is new in Washington, and has been but little used in the United States. The block is manufactured in England, and is guaranteed for five years. It has met with considerable success throughout Europe. Its cost is approximately \$2.60 a square yard.

#### SEWERAGE AND SANITATION

##### Selection of Consulting Engineer Leads to Lawsuit

Butler, Pa.—Councilman Joseph Ball has filed a bill against Burgess Bell and members of Council asking for an injunction to restrain the defendants from entering into a contract with F. G. Ross for furnishing plans, engineering work, etc., for a sewage disposal plant. The complaint alleges that the bid of F. G. Ross was \$7,350 and that T. Chalkley Hatton was the low bidder, at \$4,750. The proposal advertisement for bids appears to have been indefinite, in that it allowed bids for different sorts of services and supervision to be received.

##### Would Improve Sanitary Conditions of Cohoes

Cohoes, N. Y.—State Health Commissioner Porter has addressed a letter to Mayor M. D. Hanson explaining the duties of his department in investigating insanitary conditions in municipalities and elsewhere, with a view to their improvement. Accompanying the letter is a detailed report of an investigation made by State Inspectors. The high death rate, notably in the case of typhoid and diseases of infants, was the starting point of the search. Overcrowding, poor milk supply and impure water are given as the ruling factors in the bad record. It is advised that periodical examinations of milk be made, and that suitable ordinances insuring a pure supply be passed. The city is urged to recognize the necessity for the immediate construction of a filtration plant, as impure water is considered as the main source of the high death rate.

**City Now Supervises 5,000 Milk Dealers**

Baltimore, Md.—Health Commissioner Bosley is putting into thorough working order the inspection machinery necessary to supervise the 5,000 milk dealers licensed under the new law. The Commissioner is pleased to note that milkmen who, under a misapprehension, opposed the passage of the ordinance, have shown a commendable disposition to comply with it. The next most important step in the crusade for pure milk is a thorough education of the people in the congested districts regarding the care of milk in the home. In this work much aid is expected from the social settlements and charities.

**City Saves Money by Direct Labor System**

Ensley, Ala.—Satisfactory progress is being made in the construction of the Fifth Ward sewer by the city forces, under direction of City Engineer Van Ohl. The sewer is 20-inch throughout, and would have cost, if let by contract, about \$30,000. Cost figures so far obtained bear out the opinion of the officials that they could do the work directly for about one-third less than the contract price.

**Milk Inspection Ordinance Passed**

Madison, Wis.—After one of the hardest fights known in the Council, Alderman Constantine's milk ordinance has been passed by a vote of 11 to 8. The ordinance requires health inspectors to visit, inspect and test cows of all herds, wherever situated, supplying milk within the city limits.

**Health Board Defies Council**

Pottsville, Pa.—An important move to test the authority of the local health officials was decided upon when the Minersville Board of Health voted to build a large sewer in that town, notwithstanding Council has refused to appropriate money for the construction. As State officials have declared the sewer essential, the Health Board says the borough will be compelled by the court to pay for it.

**Waters of Manasquan River to Be Purified**

Sea Girt, N. J.—The State Board of Health has issued an order directing Quartermaster-General C. Edward Murray to change the sewerage system at the State camp grounds at Sea Girt to prevent further pollution of the Manasquan River. Private land owners at Sea Girt have also been notified to cease sewerage into the river.

**Tuberculosis Expert in City Service**

Washington, D. C.—Dr. Joseph J. Kinyoun has been appointed by the Commissioners a bacteriologist in the contagious disease service of the Health Office. His work will be in connection with the law enacted at the last session of Congress providing for the registration of all cases of tuberculosis and the examination of sputa of persons reported or suspected to be suffering with this disease.

**Compulsory Sewage Purification in Ohio**

Van Wert, O.—For the first time the Bense law, giving the State Board of Health the power to order cities to establish filtration plants, was put in force by the Board at a meeting at the Hollenden Hotel, Cleveland, June 17, with Van Wert as the victim. The Bense bill, passed after a long fight by the last Legislature, provides that when the State Board of Health is petitioned, it can force cities to build filtration plants for water and sewage. Secretary C. O. Probst, of the Board, says that by its use it would be possible to clean up all of the rivers and water fronts in the State. Township authorities petitioned for action of the Board, saying that Van Wert sewage was polluting the water supply. The Board investigated, found that the complaint was well founded, and decided that a sewage filtration plant must be installed. The city authorities protested that they were financially unable to build the plant, but the Board ordered them to dig an intercepting sewer and to build a plant. It was estimated that it would cost \$50,000 to purify the outflow from the fifty-four sewers of the town.

**WATER SUPPLY****Fire Plugs Found Dry**

Michigan City, Ind.—Fire Chief Charles Schlundt has found it necessary to publish a notice requesting the public to cease the use of water for sprinkling their lawns whenever an alarm of fire sounds. This resulted from the discovery that at the hour fixed for sprinkling no water at all could be obtained from one of the city hydrants. Superintendent Henry Schreiber, of the water works, reports that the big well at the pumping station is kept low at all times. A plan for dividing the city into sections and setting a different hour for the sprinkling of lawns in each section is being considered.

**Niagara Falls Water Commission Starts Work**

Niagara Falls, N. Y.—The new Water Commission has appointed a committee to confer with officials of the Niagara Falls Water Works Company in order to ascertain at what price the company would sell their plant to the city. Authority is given the same committee to ascertain the cost of a site of not less than 25 acres on which to locate a pumping station and filtration plant. City Engineer Robbins was instructed to estimate the cost of constructing a tunnel from 1,500 to 2,800 feet from the shore of the Niagara river for an intake and also the cost of a filtration plant.

**Private Companies Oppose Municipal Plant**

Tarentum, Pa.—To prevent the borough from issuing \$100,000 in bonds for the erection of a water plant, the Tarentum Valley and Allegheny Valley Water Companies have jointly filed a bill in equity in Common Pleas Court, asking for a restraining order. An ordinance authorizing the bond issue was passed by the Borough Councils a few days before. The bill recites that the plaintiffs had a five-year contract, expiring January 18, 1907, for furnishing water to the borough. While there was no renewal there was a mutual agreement, it is alleged, that the plaintiffs continue to provide water. On the ground that the plant claimed to be valued at \$450,000 will be a total loss if the borough is permitted to build its own system, a permanent injunction is asked.

**Flow of Rivers to Be Measured**

Trenton, N. J.—The State Water Supply Commission is considering plans for establishing measuring stations in the principal rivers of the State for the purpose of determining to what extent the diversion of water depletes the flow. This work was formerly carried on by the State Geological Survey, but was abandoned in 1894. It is the plan of the Commission, after establishing the stations and fixing the ratings of the different rivers, to have readings of the instruments made daily by local men and reports submitted monthly. In this manner the Commission expects to get an accurate line on the diversion of waters.

**Test of Water Alarms Town**

West Newton, Pa.—West Newton has a sensation founded on the quality of the water furnished for domestic consumption. Employees of the U. S. Radiator Company making complaint in regard to the water, officials of the company sent samples to Pittsburgh for analysis. The result of the analysis has caused general dismay. In a cubic centimeter over a thousand sewerage bacteria were found. The new plant of the West Newton Water Company is one of the most complete of its size in the State, and is just being placed in commission. The water supply is pumped from deep wells located in the Youghiogheny valley, south of the town. The origin of the pollution has not been located. The town had an epidemic of fever last summer, but the number of cases at the present time is not large.

**River Water Let Into Filtration Plant**

New Orleans, O.—The Sewerage and Water Board has made the first move in the direction of putting water into the new filtration plant by opening the valve connecting the inlet pipes from the river with one pumping pit and allowing the pit to fill.

**STREET LIGHTING AND ELECTRIC POWER****Hydro-Electric Plant for a Public Building**

Chambersburg, Pa.—Dissatisfied with the flat rate of \$21.25 per month for lighting the county home, the new Council decided to install a meter. This was done, and the bill was found to amount to over \$100 a month. Now it is proposed to run a dynamo from a water wheel now used to force water through the building and put in wires and lights.

**New Bridge Will Be Handsomely Lighted**

Harrisburg, Pa.—The lights of the new Mulberry street bridge, when completed, will add greatly to the attractiveness of Harrisburg. The lights will be carried by ornamental standards bearing clusters of lights and smaller standards with single lights. There will be no overhead wires, the current being conducted under the sidewalks and up through the standards.

**Municipal Plant Greatly Increased**

Seattle, Wash.—The Municipal Lighting Department has received materials which, when installed, will increase the capacity of the department more than threefold. The plant will be able to produce 8,000 kilowatts, instead of 2,400, as at present.

**Telephone Company Fights Subway Ordinance**

Uniontown, Pa.—The Bell Telephone Company has decided to refuse to comply with the ordinance recently enacted to compel the placing of all overhead wires in certain districts underground, and has applied to the court to have the ordinance declared null and void. It is alleged that the ordinance is not general in its application, but is local and special, and intended to further the desires and wishes of private property owners along this stretch of streets.

**FIRE AND POLICE****Fire Officials Given Police Powers**

Fruitvale, Cal.—A fire ordinance has been passed, which, among other regulations, gives the Chief of the Fire Department power to deputize the captains of the three fire companies as special officers, with the power to make arrests during fires.

**New Fire Badges Contain City Flag**

Harrisburg, Pa.—Chief of Police George has received the supply of police and fire badges recently ordered for the use of newspapermen, fire underwriters and others connected with the Police Department or Fire Department who may have occasion to use them. With the issue of these badges instructions have been given to the policemen not to permit anyone within the fire lines who does not wear one. The badges are circular and about the size of a half-dollar. They are tin, covered with celluloid. An eighth of an inch blue band encircles the button or badge, bearing the words, "Police and Fire Lines, Harrisburg, Pa." Inside the blue edging is a gilt-edged keystone, a facsimile of the city flag keystone. The keystone shows up in bolder contrast against a bluish-white background. The buttons are mounted on pins, and are a decided improvement over the old cards, which had been in use for the purpose for the past several years.

**Electric Fire Boats for Chicago**

Manitowoc, Wis.—The "Joseph Medill," one of the most efficient fire boats ever constructed in America, was launched at the yards of the Manitowoc Dry Dock Company for service in the Chicago Fire Department. The "Joseph Medill" is the first of a pair of fire boats designed especially for the needs of Chicago by Fire Marshal M. J. Horan. They will cost \$219,000. The other will be launched about July 15. They will be the first fire boats propelled by electricity. No problem of low steam pressure will prevent prompt starts when the alarm sounds. Each boat will be equipped with turbine pumps with a capacity of 45,000 gallons a minute. The nozzles and standpipes are arranged about the center of the craft, 14 feet from the deck. This is to prevent the trouble experienced in fighting fires close to a dock. The unusual fire boats have hose connections on the forecastle and stern.

**Municipal Blacksmith Makes New Wagon**

Lynn, Mass.—The first finished product of the municipal blacksmith shop, at the rear of the Broad street fire station, opened in April, 1907, by Chief Thomas A. Harris, is a fine looking supply wagon, sent to the Lewis street house, where it will be used for exercising the horses and supplying the steamers with coal. Since the shop was opened the Fire Department has been able to save several thousand dollars, as all the repair work of the city has been done there. John M. McKenzie, for many years connected with the department, has been in charge of the shop, and under his direction the new wagon has been built. It is made of all Norway iron, and is far superior to anything ever purchased by the city. In speaking of the blacksmith shop, Chief Harris said that the only inconvenience was its size. It is impossible to get the big trucks inside, and for this reason it is anticipated that in another year the Chief will ask for an appropriation to enlarge it. He says it is one of the best investments the city ever made.

**Would Raze Fire Traps to Reduce Hazard**

New York, N. Y.—The New York Board of Trade and Transportation at a recent meeting adopted a report on the problem of fire protection. The report takes the ground that the danger of conflagration on an extensive scale which now exists is due not so much to the high buildings as to the general prevalence of low, inflammable types of buildings. These structures should be eliminated as fast as the city is rebuilt and buildings of incombustible materials erected in their place. All tall buildings should be compelled to provide in the structure itself a separate adequate fire-fighting equipment. With these precautions it is claimed that the statement of fire underwriters that the greatest danger is from fires that originate in tall buildings would no longer be true.

**Board of Control Thanks Police for Cooperation**

Norfolk, Va.—The Board of Control has addressed a letter to Chief of Police Mallory H. Bush thanking him and his men for cooperation and assistance in reporting the many matters that come under their observation. In describing conditions found, the suggestion is made that a distinction should be made between things that are unsightly and those which are dangerous. In reporting holes in pavements the reports should note whether the streets are paved or unpaved. Special care should be taken not to report holes in pavement as dangerous unless they really are so.

**Policemen to Get Longer Vacation**

Rochester, N. Y.—Commissioner of Public Safety Owen has issued an order increasing the vacation period for Captains, Lieutenants, Sergeants, patrolmen and patrolmen assigned to plain clothes duty in the Police Department as follows: Captains, fourteen days; Lieutenants, twelve days; Sergeants, twelve days; patrolmen, ten days, and patrolmen assigned to the Detective Bureau, twelve days. Formerly Captains were allowed twelve days; Lieutenants, ten days; Sergeants, nine days; patrolmen, including those assigned to the Detective Bureau, eight days. A committee of patrolmen asked Commissioner Owen for a two weeks' vacation. They pleaded that firemen are allowed fourteen days.

**To Establish Bertillon System**

Tacoma, Wash.—An ordinance has been introduced in the City Council by Councilman S. R. Wilkinson, asking for an appropriation to provide for the office of Bertillon Inspector and for necessary instruments for the measurement of criminals. Sergeant Ralph Cole, who is a skilful photographer, will be placed in charge. By the establishment of this system the Department will be the first on the Sound to so equip itself and its efficiency will be increased 50 per cent. For the annual membership fee of \$75 the Tacoma department can become a member of the National Bureau of Identification, which includes in its membership every city in the country having a Bertillon gallery.

**Skyscraper Fires Can Be Handled in Louisville**

Louisville, Ky.—In order to demonstrate to doubters that the Louisville Fire Department could handle a fire in any skyscraper in the city, Chief Tyson gave an exhibition of what it was possible for his engines to do. With a single engine he threw a 2-inch stream of water over the flagpole of the Lincoln Bank building, 240 feet from the ground. By combining two engines he threw a  $2\frac{3}{4}$ -inch stream to a much greater height. One member of the Board of Public Safety is reported to have lost three \$5 hats as a result of the test.

**Against Concealed Weapons**

Washington, D. C.—Maj. Richard Sylvester has renewed his activity in the matter of having a law enacted which will reduce the violations of the law against the carrying of concealed weapons and give the police a better supervision over weapons. It is his intention to ask the Commissioners to have a law enacted which will require all dealers to make daily reports of sales, and which will also deal with traffic in such weapons between individuals. In the first place, says the Superintendent of Police, all revolvers sold should be numbered, and dealers who sell them should be required to exercise more than ordinary care when selling them. It is his idea that the names and addresses of purchasers should be reported to the police within twenty-four hours of the time the sales are made, the reports to be made to the Superintendent of Police, Bureau of Firearms, his intention being to establish such a bureau as soon as the law is enacted. Maj. Sylvester thinks the law should compel individuals to obtain permits to dispose of revolvers. Such a requirement, he thinks, would give the police an opportunity to trace all such weapons, and when murder is committed and the revolver abandoned the record would be of assistance in making investigations. The Commissioners will be asked to embody the ideas of the Superintendent in a law covering the general question of traffic in weapons.

**Chased Car at Sixty Miles an Hour**

Yonkers, N. Y.—Judge Joseph H. Beall recently imposed a fine of \$100 upon Joseph Thomas, chauffeur for James T. Mallatesta, a Bronx contractor. Thomas, at Mallatesta's suggestion, operated an automobile at a speed close to 60 miles an hour in endeavoring to escape from Sergt. Vansleendbergh. The sergeant, who was mounted on a motorcycle, pursued the car all the way to Elmsford.

**GOVERNMENT AND FINANCE****Association Fights Alleged Favored Contractors**

Philadelphia, Pa.—Alleged illegal and unbusinesslike acts of the administration, including the secret award of contracts to favored contractors, the selection of high bidders for important municipal work, the skimping of contracts and their approval by inspectors who are said to have been chosen for that particular work by the contractors themselves, the attempt to pay out money on illegal contracts and the floating of temporary loans are to be contested in the courts according to the program arranged by the Citizens' Municipal Association. The first attack will be directed against the payment of \$60,000 for the South Broad street boulevard contract awarded to Edwin H. Vare, over which there has already been litigation.

**Finance Committee Gives Good Advice**

Butler, Pa.—After making its annual report and recommendation for appropriations the Finance Committee of Council gives the following general advice:

That the secretary be instructed to open an account with each of the departments and that he keep a correct account of the amount of money used by each department and report the same to Council at least every three months.

That no committee be permitted to exceed in their expenditures the amount of money appropriated for their department except in cases of absolute necessity or where the public safety requires such expenditure; and then only after the matter has been submitted to Council and authorized by a vote of a majority of the entire Council.

**Commission Government in Massachusetts**

Boston, Mass.—No Legislature in recent years has shown a greater interest in the problems of municipal government and none has taken a wider departure in the special city charter bills reported as the session of the Great and General Court of Massachusetts recently brought to a close. The fate of the scheme for governing municipalities by commission will depend upon the success or failure of the plan which has been adopted for the city for Chelsea. The working of the new city charters of Haverhill and Gloucester, provided they are accepted by the voters, will be watched with much interest throughout the entire State.

**Council to Regulate City Deposits**

Altoona, Pa.—Two ordinances regulating the disposition of city funds have been introduced in Council. One makes it unlawful to deposit funds in an institution which is surety on the bond of the City Treasurer, and the other makes it unlawful to deposit in any bank or trust company a sum in excess of 30 per cent. of the capital stock of the institution. The ordinances are the aftermath of an objection raised to the bond of City Treasurer Clark.

**Would Guard City's Money**

Pittsburg, Pa.—Precaution for the safety of the city's deposits in local banks was the keynote of a special session of the Pittsburgh Chamber of Commerce. The membership of the Chamber consists mostly of business men, and they stand as a unit in the movement to better protect the city's funds. A resolution was offered by A. J. Logan, and as a result of its adoption members of the Chamber will appear in person at the special meeting of Council to protest against the passage of the ordinance distributing the city's money among various banks at 2 per cent. interest. Considerable discussion followed the report of the municipal affairs committee. In this report the passage of an ordinance now in the Finance Committee of Councils, providing for depositaries for the funds of the city and their regulation, was recommended with one exception, an amendment being offered and passed for the provision of proper bonds to secure the deposits. The section of the ordinance as amended provides for Government, State, county and school bonds, and also such railroad bonds as are accepted by the Government for the security of deposits. This latter provision was presented by Joseph R. Paull, of the Bank of Pittsburg, and brought out some objection on the part of H. D. W. English, who claimed this was just the very feature of the Aldrich currency bill which proved so objectionable to the people. An amendment was offered by Mr. English requiring that the city demand an audit by a proper audit company of the city's deposits at least once a year. This measure was withdrawn when it was announced by William H. Stevenson that a general ordinance providing for such an audit was already in the hands of the Finance Committee of Councils.

**Plan to Save City from a Deficit**

Oakland, Cal.—Agreements entered into some time ago by departmental heads of the city government by which they will forego contemplated improvements until after the opening of the next fiscal year will save the city from a deficit. City Auditor Gross has announced that it will be necessary to transfer about \$30,000 from the special fund to the general fund in order to carry out the plan agreed on. It simply means that the departments will not have as much money next year as estimated, but they will not be badly handicapped.

**Saloon Licenses Increased**

Paducah, Ky.—An ordinance has been passed raising the license for saloons from \$150 to \$500 a year. The increase was urged by Mayor Smith partly on the ground that the city was falling behind in its revenues and the change would make good the deficiency. He said further that all business licenses would probably be raised on the first of next year. The city needs funds to carry out extensive street paving plans and sanitary improvements which it contemplates.

**Village Trustees Enabled to Borrow**

Penn Yan, N. Y.—After a vacant condition lasting over six months, the village Board of Trustees once more has real money in its treasury and will be able to pay its employees. Under the old law the village government could not borrow money. This was modified by the last Legislature so that money may be borrowed in anticipation of taxes for the current fiscal year prior to the levy thereof, but not in excess of the amount previously estimated by the Board of Trustees as necessary to be raised during the same fiscal year, and it must be payable within a year.

**Plan to Increase Value of Improvement District Bonds**

Tacoma, Wash.—City Treasurer Ray Freeland has formed a plan for guaranteeing local improvement bonds by which he thinks their market will be extended, the demand greatly increased and improvements made less costly to the property owners. It seems that in times past that assessments in two or three districts became delinquent. This has affected the value of all improvement bonds. There are other districts in which a surplus has accrued. These sums have generally been transferred to general funds. It is proposed that in the future all surpluses be kept in a fund to guarantee the payment of any possible delinquencies. The result will be that contractors, being sure of a good market for the bonds at par, can bid lower for their work.

**Wanted—Suggestions Regarding Municipal Government**

Boston, Mass.—One of the duties of the Finance Commission, in addition to those which have hitherto devolved on it, is to report findings and recommendations as to a basis for suitable laws for the government of the city. To enable it to discharge this new duty, the Commission desires to obtain suggestions from any person upon any aspect of the municipal problem. These suggestions may be made orally or in writing. Public hearings will be given at which any person interested may appear, or their views may be given privately at conferences. Communications may be addressed to the Finance Commission, 436 Tremont Building, Boston.

**REFUSE COLLECTION AND DISPOSAL****Citizens Asked to Cooperate for Cleaner Streets**

Albany, N. Y.—Both the Chamber of Commerce and the Police Department have distributed circulars addressed to citizens requesting individual care in preventing the littering of the streets with paper and rubbish. The circulars request citizens not to drop papers in the streets. Merchants are asked to take care when goods are unpacked on the sidewalks that straw, paper and rubbish are not allowed to be scattered about. Contractors are requested to keep the fronts of buildings where they are working clean. Everybody is warned that there are statutes providing penalties for the littering of streets.

**Harrisburg Improves Collection Service**

Harrisburg, Pa.—Chairman First of the Sanitary Committee reports that garbage conditions have greatly improved during the past few weeks. The garbage contractors have made great efforts to have the collections made to the satisfaction of the Committee. Eight teams are now employed on garbage and sixteen on ashes. Another garbage wagon and an animal wagon will soon be added. Mr. Martin, of the firm of contractors, states that his plant has reduced 22 big loads of garbage in a day without a hitch. The contractors complain against the placing of grass cuttings in garbage, saying that it should go with the miscellaneous refuse.

**Jacksonville Plans for Three Incinerators**

Jacksonville, Fla.—A report has been submitted to the Board of Public Works by Chairman Wamboldt and City Engineer Philip Prioleau, a special committee appointed to investigate and report on the best method of disposing of waste in the city. After visiting neighboring cities, the committee states that climatic conditions require a quick disposal of all matter subject to decay. Accordingly, they recommend the division of the city into three districts and the location of an incinerator at a convenient place in each district. No particular style of incinerator is mentioned as most desirable.

**Ordinance Calling for Metal Garbage Cans to Be Contested**

New Haven, Conn.—Some time ago the Aldermen passed an ordinance to the effect that every house in the city must have a metal covered garbage can. The ordinance is now to be contested in the courts. It is claimed the Aldermen had no right, under the charter, to pass such an ordinance; also that the ordinance is unreasonable inasmuch as it makes the owner or agent responsible for these cans, rather than the occupants; also that in ordering the placement of garbage cans the Aldermen have no right to specify the kind, calling as the ordinance does for metal ones; also that they have no right to limit the time to forty-eight hours after notification.

**PARKS AND OUTDOOR ART****Fair Grounds to Be Used as City Park**

Dayton, O.—Council has made arrangements to turn the Fair Grounds over to the public for use as a park during the summer months, except when fairs are being held. The only expense the city will be put to will be the providing of seats, electric lights and police protection.

**Playgrounds for All Children of Pittsburgh**

Pittsburg, Pa.—An ambitious plan for playgrounds is proposed by the Pittsburg Playgrounds Association. It will ask for a people's bond issue of \$2,000,000 for the purchase of lands and equipment for additional small parks and playgrounds. It is proposed to provide suitable places for all the children of Pittsburg to play in. The association has selected sites for nearly a dozen small grounds in addition to the large one already in operation. Half the money asked for is needed for the grounds.

**Engineer Thomson Chief Speaker at Portland Meeting**

Portland, Ore.—A big civic improvement meeting was recently held at the Empire Theatre, where, at the invitation of the Realty Board, City Engineer R. H. Thomson, of Seattle, Wash., was the principal speaker. He told of the advantages of extensive public improvements, particularly of those carried out by the authority vested in the City Council to condemn land. In Portland there was no such authority and the Park Board particularly was hampered in its work of constructing boulevards. Mr. Thomson advised the people of Portland to give increased powers to their officials. As a result of the meeting a committee of sixteen was selected to consider and push civic improvement.

**Mayor Plans New Athletic Field**

Rochester, N. Y.—Mayor Edgerton has arranged details and presented to Council plans for an athletic field, baseball diamond and parade grounds on the East Side of the city near the boundary line of the Eighteenth Ward. The proposition is to convert the large area back of the new armory into a general recreation space for the city at large. The ground already belongs to the city and will require little expense in the way of grading. The field is 450 feet long and 250 feet wide.

**To Form Lake Within Village**

Le Roy, N. Y.—A meeting was held recently under the auspices of the Board of Trade for the purpose of considering the plan of beautifying Le Roy by raising the dam at Main street and setting the water back in the Oaltsu river so as to make a miniature lake in the heart of the village. The Power and Milling Company, which owns the water right, has agreed to raise the dam without expense to the village if the latter will be responsible for damage for over-flowing lands. An increase of eight feet would allow launches and small craft to navigate the river a considerable distance.

**Saves Boulevard Plan By Reducing Width**

Portland, Ore.—After several weeks of contention and strife among property owners interested in the opening, widening and improving of Vista avenue on Portland Heights, as to the nature of the improvements to be made, a compromise is now in sight. By reducing the width of the avenue from 80 to 60 feet, in accordance with plans made by City Engineer Taylor, it is believed the scheme can be put through.

## RAPID TRANSIT

## Must Sell Trolley Stock

Boston, Mass.—A final decree, restraining and enjoining the New York, New Haven & Hartford, its officers, directors, agents and employees from holding any stock in the various trolley companies named in the information recently filed against the New Haven by Attorney-General Malone, has been handed down by Judge Rugg in the State Supreme Court. The decree gives the company until July 1, 1909, to dispose of its present holdings in these companies. Before announcing the decree, the court denied the motion of the New Haven for leave to show that it had parted with all its trolley holdings except in the Worcester & Webster and Webster & Dudley street railway companies.

## Subway Escalators Tried in Boston

Boston, Mass.—The first escalators in the Boston Subway system have been completed and tested. They are located under the old State House and are to be used in connection with the Washington street tunnel at its junction with the East Boston tunnel at Washington, State and Devonshire streets. The Washington street tunnel will not be ready for use for three months, so that the escalators will not be used at present by the traveling public. These running stairways will transport passengers a distance of two ordinary flights. The time occupied in making the ascent is 30 seconds. The test showed that each machine was capable of carrying 21,000 pounds.

## Car Accidents Increase in Gotham

New York, N. Y.—In a report issued by the Public Service Commission it was shown that the number of accidents on the street railroads in May largely exceeded the number for the preceding month. In May 242 passengers were seriously injured, as compared with 191 in April. Last month 32 passengers were killed as against 30 in April. The minor injuries in May reached a total of 3,382, while in April the number was 2,836. The Commission attributes these increases to the use of open cars.

## New Rapid Transit Line Opened

Pittsburg, Pa.—After two years' labor and the expenditure of more than one million dollars, the Ardmore Street Railway Company has completed its road between Wilkinsburg and East Pittsburg. The initial trip was made June 19, when the cars covered the distance of about four miles in less than 14 minutes. The new road is equipped with 10 high-speed wheel-driven cars. The roadway is skirted for a considerable distance by an 80-foot boulevard. The roadbed is comparatively straight and required 350,000 cubic yards of grading. William Flinn is President and George H. Flinn, Treasurer, of the road.

## New Franchises for Trolley Company Proposed

Portland, Ore.—All the franchises for electric railways in the city held by the Portland Railway, Light and Power Company will be revoked and a new franchise granted conforming to the requirements of the present city charter if steps taken by Mayor Lane's Franchise Committee are carried out. Ground for this action is based on the failure of the company to build railways on forty or more streets for which they hold franchises. Additional incentive is given by the recent application of the company for franchises on many new streets and the request for the abandonment of a number of lines now in use. The new charter will contain rules regarding the construction and operation of street car lines, the type of cars to be installed in service, the manner of protection granted the public, and especially in regard to the type of brakes and fenders. It was also suggested that a section should be included which will force the corporation, as part compensation for the grant, to give free transportation to all city officials and employees during working hours, and to sprinkle the streets over which the lines are operated.

## Through Elevated Routes Insisted On

Chicago, Ill.—Having in mind the eventual unification of all elevated and surface lines in Chicago, the committee on local transportation of the Chicago City Council has decided to insist on the adoption of through routes for elevated roads.

## MISCELLANEOUS

## Drastic Cocaine Ordinance Adopted

Baltimore, Md.—Mayor J. Barry Mahool has signed the cocaine ordinance, which was introduced in the City Council at the instance of President Sherlock Swann of the Police Board. It is now unlawful for any person to have on his or her person cocaine in any form, unless it can be shown conclusively that the drug was procured on the original prescription of a registered physician. The effect of the ordinance, Colonel Swann believes, will be the stamping out of the cocaine traffic, for with this formidable weapon of law in hand the Police Department will be able to exercise extraordinary powers for the repression of the vice.

## Mayor Proclaims a Day of Rest

Bradford, Pa.—A proclamation has been issued by Mayor R. J. Hoffman reciting that:

Whereas, The members of the Bradford Business Men's Association have decided to devote one day to absolute cessation from toil, to the end that they, their families, employees and friends may enjoy absolute rest and recreation, and therefore have decided to close their places of business for one entire business day and to spend this day enjoying a huge public picnic. Now, therefore, I, Ross J. Hoffman, Mayor of the City of Bradford, do respectfully urge and request that all places of business be closed on said day, that is, July 22, 1908, that the entire city may participate in this annual day of rest, and I further suggest that this institution of a public rest day be perpetuated annually thereafter.

## Newark Gets Ship Canal

Newark, N. J.—The Newark Board of Works has received a report from the Advisory Dock Commission recommending the reclamation of the Newark meadows, the development of the water front of Newark Bay, and the building of a 12,000-foot ship canal. The report calls for the improvement of more than 1,000 acres of land, the building of wharves and slips and the laying out of streets and railway and trolley tracks, all to cost \$5,136,726. The site selected for the development is land facing the bay and extending 2,000 feet either way from Peddie ditch, now an open sewer. The development will be gradual and in unit system, allowing the city to carry on the work as the demand requires and its financial condition permits.

## Rabies Epidemic Spreads

Albany, N. Y.—Raymond A. Pearson, State Agricultural Commissioner, says that 30 towns in this State are under quarantine for rabies or hydrophobia. "Officials of the department," says Commissioner Pearson, "have never known of such a serious outbreak of rabies as at present. Similar conditions exist in other parts of the country."

## To Kill All Dogs at Large

New York, N. Y.—As a result of the prevalence of rabies in the city, and of the number of deaths resulting therefrom, the Board of Health has taken drastic action to check the spread of the disease. Dr. Darlington has announced that inspectors will be sent out with orders to collect and destroy all dogs running at large without muzzle or without leash. Two days' notice was given that all owners might be made aware of the plan and might be able to comply with the rules.

## Historic Railway Station to Be Removed in Washington

Washington, D. C.—By special direction of President Roosevelt the historic old buildings at the corner of Sixth and B streets, built and formerly occupied by the Pennsylvania Railroad as a passenger station, are to be entirely removed from their present location with a view to the general improvement of that section of the Mall. Col. Charles S. Brownell, Superintendent of Public Buildings and Grounds, will receive bids on July 6 for their demolition.

## Municipal Building to Be Dedicated July 4

Washington, D. C.—After four years of construction work, the handsome white marble home of the District government, at Fourteenth street and Pennsylvania avenue, Northwest, to be known as the Municipal Building, is completed and ready for occupancy. It will be dedicated, with ceremonies, on July 4.

## LEGAL NEWS

### Summary and Notes of Recent Decisions—Rulings of Municipal Interest

#### INTERSTATE WATERS—TAXATION

**Central Railroad Company of New Jersey, Plaintiff in Error, vs. Mayor and Aldermen of Jersey City and Robert Davis, Collector Thereof.**—Lands lying between the middle of New York Bay and the low-water line on the New Jersey shore are taxable by New Jersey, notwithstanding the provisions of a compact between the States, fixing the boundary line as the middle of New York Bay, approved by Congress by act of June 28, 1834, by which New York is given "exclusive jurisdiction of and over all the waters of the Bay of New York," and "of and over the land covered by the said waters to the low-water mark" on the New Jersey side, subject to the exclusive right of property in New Jersey "in and to the land under water lying west of the middle of the bay," and to her exclusive jurisdiction over wharves, docks, and improvements made, or to be made, on her shore, and to her exclusive right to regulate the fisheries on the west of the middle of said waters.—United States Supreme Court.

#### INCORPORATION OF TOWN—FARM LANDS

**State ex rel. White et al. vs. Small et al.**—Persons who are farmers and taxpayers within an illegally incorporated village have a sufficient special interest in having its incorporation declared invalid to maintain quo warranto to determine the existence of the village against the persons assuming to act as its officers. An order incorporating a village was made in 1897, but no attempt to organize a municipal government was made until 1902, and until 1905 taxes were not levied against farm lands included within the limits of the village as incorporated. As soon as the village authorities undertook to treat the farm lands as part of the village and subject them to municipal burdens, the owners of the land brought quo warranto against the persons, assuming to act as officers of the village to determine its existence. Held, that the owners were not guilty of laches precluding them from maintaining their suit.—St. Louis Court of Appeals, Missouri.

#### EXEMPTION FROM TAXATION—ASSESSMENTS

**Board of Improvement Paving District No. 5 et al. vs. Sisters of Mercy of Female Academy of Ft. Smith. Board of Improvement Sewer District No. 2 et al. vs. Same.**—Section 3 of the private act of December 20, 1860, conferring corporate powers upon plaintiff, which provides that a certain amount of plaintiff's ground, together with the property thereon, "shall be exempt from all taxation, State, county, municipal and special, during the existence of this charter," does not exempt such property from assessments for local improvements; the word "tax" not including assessments, and the word "special," as used with "taxation," referring to special taxes levied and collected in the manner of general taxes, such as road and school taxes, and not to local assessments.—Supreme Court of Arkansas.

#### DEFECTIVE SIDEWALK—ICE

**Pringle vs. City of Detroit.**—Evidence in an action for injuries to plaintiff by slipping on an icy sidewalk, held to warrant a directed verdict for defendant, on the ground that plaintiff's injuries were caused by the ice alone, and not by reason of a defective condition of the walk. On review of a judgment on a directed verdict for defendant in a negligence case, the court will view the evidence of plaintiff most favorably to him, and indulge in all reasonable inferences therefrom to make out his case.—Supreme Court of Michigan.

#### DELINQUENT WATER RATES

**Board of Public Works of City of Niles vs. Pinch.**—Under Compiled Laws, Section 3275, which provides that the Board of Public Works may provide when and to whom all water and light rates shall be paid, and how payment shall be enforced, and may also collect such rates in an action of assumpsit on the common counts in any court of competent jurisdiction, the board of public works, who may contract in their own name relating to such matters, though they act as agents or trustees of the city, can bring suit to compel payment of light and water rates. A guarantor of such a delinquent may be sued by the Board under the statute in any form of assumpsit which is appropriate; the words "on the common counts" being permissive only, and not mandatory.—Supreme Court of Michigan.

#### RAILROAD IN STREET

**Station vs. Atlantic Coast Line R. Co.**—Though the title to the soil of a street is in the city, an abutting owner has, in addition to his rights to use of the street as a citizen, rights peculiar and incident to his ownership, for invasion of which, by a use of the street not within the legitimate purposes of a highway, he may maintain an action in his own right. A city has no right as against abutting owners to grant to a steam railroad an easement to lay its tracks on and operate its trains over the streets, though the title to the soil thereof be in the city. Though without condemnation, and without right as against abutting owners, a steam railroad constructs and operates a track in the street, an abutting owner who purchased his lot after the road was constructed, and while it was in operation, or who after he purchases sees it constructed, and makes no objection till after it has been operated many years, may not have its use in a proper way enjoined, where great injury to the railroad company and the public would thereby be occasioned. Though a railroad has acquired the right as against an abutting owner to maintain its track in the street, and to run its trains thereon in a customary, reasonable, and proper manner, he may recover of it as for a private nuisance for its use thereof in front of his premises for other purposes, and in an improper manner, injurious to him, with a right to injunctive relief against such improper use, if continued.—Supreme Court of North Carolina.

#### CHANGE OF WATER COURSE—DAMAGES

**Prime et al. vs. City of Yonkers.**—A city placed a structure in a stream, and so long as a dam remained the structure did not affect the flow of the water. The Board of Health of the city removed the dam, and thereafter the structure changed the flow of the water and injured the property of an abutting owner. The owner was not aware that the water was causing injury until several years after the removal of the dam. The city was not requested to remove the abutment until the commencement of an action for the injury. Thereafter the city removed the abutment and built a wall preventing further injury. Held, not to show as a matter of law that the city failed to exercise reasonable care, though the burden rested on it to change the waterway when a necessity therefor occurred.—Court of Appeals of New York.

#### OCCUPATION TAX—REASONABLENESS

**Sale Lake City vs. Christensen.**—The Revised Statutes, 1898, confer power on cities to raise revenue by levying and collecting a license fee or tax on any private corporation or business within the limits of the city, and regulate the same by ordinance, and provides that all such license fees and taxes shall be uniform in respect to the class upon which they are imposed. Held, that an ordinance imposing a tax on any business, trade, profession or calling, and which divides the merchants and bankers into twenty-two classes, those carrying stock exceeding \$500,000 to constitute the first class and pay an annual license tax of \$500, the lowest class being limited to \$200, which pays an annual license tax of \$1, and the amount of \$100,000, constituting the difference between each of the first five classes, was not in violation of the statute, the classification, while in one sense arbitrary, not being unreasonable; that the penal provision of an ordinance providing for an occupation tax may be void, as imposing a penalty for failure to pay the tax which is not imposed for a failure to pay taxes generally, does not invalidate the remainder of the ordinance.—Supreme Court of Utah.

#### MUNICIPAL SUPPLIES—BONDS

**People to Use of Houghton, vs. Newberry et al.**—Under Completed Laws, providing that where public buildings, public works, and improvements are about to be built, repaired, or ornamented under contract at the instance of the State or any subdivision thereof, a bond shall be required of the contractor for the performance of such work, a contract with a stone and supply company to furnish limestone dust at a municipal asphalt plant did not make the company a contractor for the building, repairing, or ornamenting of a public building, public works, or improvements, and hence no bond was required of such contractor. Where, under Completed Laws 1897, requiring a bond for the performance of work done under contract for the building of a public building or improvements, a company, under contract to supply limestone dust at a municipal asphalt plant, gives a bond reciting that such bond was required by the statute, the fact that no bond for such work was contemplated by the statute does not defeat the liability of the obligors in the bond.—Supreme Court of Michigan.

## STREET WIDENING AT CITY'S EXPENSE

**In re Sochitt.**—The Laws of 1907, declaring that the total expenses of the widening of L street in the Borough of Brooklyn shall be borne by the city of New York notwithstanding any assessments theretofore levied on the property benefited, and directing the cancellation of all such assessments remaining unpaid and the refunding of any such assessments paid, passed after the entry of a final order by which the various steps, including the fixing of a district of assessment and the apportionment of the assessment against each parcel to be benefited, were confirmed, which assessments so fixed and apportioned were entered on the appropriate tax and assessment books, and thereupon became liens on the separate parcels against which entered, is not in violation of the State Constitution as impairing a property right of the city in the assessments levied, resting on a judgment of a court of competent jurisdiction, since while the order, so far as it divested the title to real estate by virtue of the right of eminent domain and fixed the compensation, had all the force and effect of a judgment which the Legislature could not undo. So far as the court by the order apportioned and imposed an assessment, it acted as but a legislative agency in the exercise of a taxing power.—New York Supreme Court.

## INJURY TO PROPERTY OBSTRUCTING STREET

**Tolkon vs. Otto E. Reimer Co.**—The use of a street for the purpose of vending wares is an unlawful encroachment, under City Charter, Laws 1901, providing that "the Board of Aldermen shall not have power to authorize the placing or continuing of any encroachment or obstruction upon any street or sidewalk, except the temporary occupation thereof during the erection or repairing of a building on a lot opposite the same." One unlawfully obstructing a street cannot recover for injuries received by being struck by a passing truck, where it did not appear that the driver willfully or wantonly ran into him. One lawfully using a street in pursuing his occupation must exercise some care to avoid being hit by passing vehicles.—New York Supreme Court, Appellate Division.

## REMOVAL OF POLICEMAN

**People ex rel. Syperrek vs. McAdoo, Police Com'r.**—A proceeding by certiorari to review the dismissal of a patrolman is instituted when the petition is presented to the court, and not when the writ is served, under Greater New York Charter, Laws 1901, providing that such proceedings shall be instituted within four months after the decision sought to be reviewed. While the power to convict and punish a patrolman for conduct unbecoming an officer is vested solely in the Police Commissioner, he may do so upon evidence taken at a hearing before a deputy commissioner and reported to him, but a dismissal by the Police Commissioner without passing on the evidence of guilt himself, but only on a report of a Deputy Commissioner that he had found the officer guilty, is improper.—New York Supreme Court, Appellate Division.

## INVALID LICENSE FEE

**Bond vs. City of Royston et al.; Elberton Grocery Co. vs. Same.**—The Mayor and Council of the city of Elberton adopted an ordinance imposing a tax of \$50 upon every non-resident dealer selling or offering to sell commercial fertilizers or delivering them to consumers within the limits of the municipality, and which provided, further, that application should be made to the Mayor for a license authorizing the same. Held, that the adoption of this ordinance was an attempted exercise of the legislative powers conferred upon the municipality, and, even though the ordinance was unconstitutional and void, the attempted enforcement of it by the levy of a tax f. fa. for the amount of the license fee would not render the municipality itself liable in damages to the party upon whose property the f. fa. had been levied, or to one whose business was affected by such attempted enforcement.—Supreme Court of Georgia.

## PURCHASE OF PATENTED ARTICLES

**Parker vs. City of Philadelphia.**—A Director of Public Works of the city, when publishing his specifications, is not required to decide finally on every item, but can ask for alternative bids on two articles to be furnished, having set up a good standard as to them in his specifications and drawings, and has prescribed a method of bidding which gives an equal opportunity to each bidder. Where the thing to be furnished under specifications for a municipal contract may be manufactured by any one in conformity to certain requirements for purchase in an open market at a standard price, there is no reason for asking for alternative bids; but where the thing is protected by a patent, and any one of a number of particular kinds complies with the established standard, it is for the best interest of the municipality to ask for bids for any or all.—Supreme Court of Pennsylvania.

## MUNICIPAL APPLIANCES

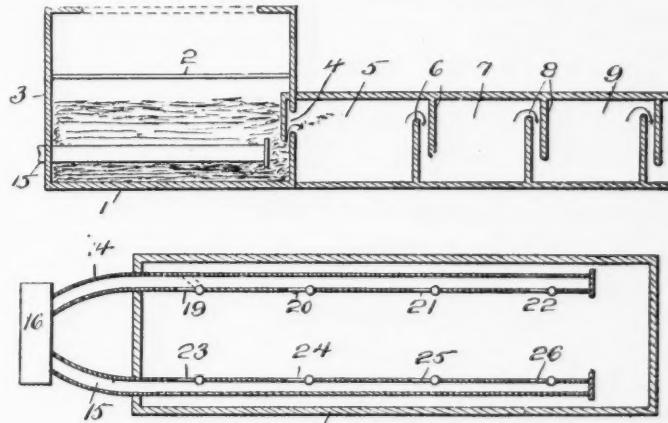
## Keegan's Anaerobic Sewage Tanks

JOHN W. KEEGAN, on November 20, 1906, obtained patents Nos. 836,323 and 836,386, the former for a process of sewage disposal and the latter for the apparatus therefor. He states that these are the result of experiments carried on for ten years previous to the filing of applications for the patents in August, 1905. He does not intend to charge a direct royalty for the use of his inventions, but will not permit plants built under these patents to be constructed except under his personal supervision, stating that his purpose is to protect himself and municipalities from improper construction by ignorant parties. His process and apparatus are based on his discovery that in the effluent from anaerobic tanks the decreased quantity of dead organic matter is accompanied by a like decrease in the quantity of anaerobic bacteria. He utilizes this fact by subjecting the effluent from an anaerobic tank to similar anaerobic treatment in a second tank and the effluent from this in a third, and so on until all the dead organic matter and anaerobic bacteria have disappeared.

Another object of his apparatus is to improve the action of the first tank by shifting from time to time the point of application of the sewage to this tank. He states that he has discovered a tendency of the anaerobic action to diminish near the region of the introduction of the sewage, which tends to produce clogging, resulting in an interruption of the free flow of the sewage and a retardation of activity in the bed as a whole. Numbers 19 to 26 in the illustration are gates in the entrance conduits, controlling the outlets from these conduits and these gates are opened one at a time in rotation as the formation of deposits indicate the necessity.

The number of tanks is determined by the strength of the sewage, climate and other conditions, being intended to produce a final effluent consisting of water holding in solution various gases which are eliminated by spraying in the open air. Before entering the first tank the sewage passes through a grit chamber (16) which retains any bulky mineral substances.

In practice, the series of anaerobic tanks, or as the inventor calls them "anaerobic bacterial beds," are arranged on a slightly inclined grade. Where natural conditions are favorable, they may be constructed by excavating the earth in suitable shapes, using the ground itself for walls or lining with concrete; or the construction may be wholly or partially above ground. Mr. Keegan does not think that his patents conflict in any way with those of Cameron or others. His residence is Tomales, Cal.



PLAN AND LONGITUDINAL SECTION, KEEGAN'S SEWAGE TANK

## Flame Arc Lamp

On account of its remarkable efficiency, pleasing appearance and the character of its light, the Flame Arc Lamp, it is claimed, has attracted as much attention as any other recent achievement in arc lamp design and manufacture. Since its introduction in America the complicated mechanism found in the earlier types has been greatly simplified and in the G-I Flame Arc Lamp the General Electric Company has a lamp made for continuous service that has proved itself reliable for commercial and street lighting. The lamps are designed to burn two in series on 110 volt or 4 in series on 240 volt alternating current or direct current circuits, but can be operated singly across 110 volts when used in connection with an external reactance or resistance. The lamps operate satisfactorily either in series or in multiple, and will burn with any approved make of flame carbons now on the market. The following advantages are claimed for it:

1. The flame arc lamp is more efficient than any other commercial illuminant.
2. The maximum light is thrown in a downward direction, making the lamp well adapted for advertising purposes.
3. The brilliant golden yellow light of the flame arc lamp is very effective in a foggy or smoky atmosphere. This quality makes the illumination very satisfactory under adverse conditions.
4. The G-I Flame Arc Lamp is strongly constructed, its mechanism reliable and durable, and it is easily and quickly trimmed.

## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

## ROADS AND PAVEMENTS

**Highways** in Great Britain. Use and cost of tar macadam. 1 p. Consular and Trade Reports, June 25.

Highway Improvement in Pacific Coast States, Recent Progress in. By James W. Abbott. Illustrated, 2 1-2 pp., The Automobile, June 18.

Good Roads in Brazil, Stimulated by Government Aid. 1 1-4 pp., Consular and Trade Reports, June 18.

**Macadam** Road Construction at Eas-ton, Pa. Detailed Cost in 1907. 1-2 p., Engineering-Contracting, June 10.

Macadam Construction. General dis-cussion. Paper before Engineers' Club of Baltimore. By W. W. Crosby, Chief Engineer Maryland Geological Survey, 2 1-2 pp., Good Roads, June.

**Dust Laying** Experiments. From annual report of New Jersey Commis-sioner of Public Roads. 1-3 p., Municipal Journal and Engineer, June 3.

Dust Prevention, Government Experiments for. From report by Director of Office of Public Roads. 4 pp., Good Roads, June.

Dust Nuisance and Its Prevention. English notes concerning. 1-3 p., Local Government Journal, May 30.

**Automobiles**, Roadways That Will Resist the Wheels of. Editorial, 3-4 p., Engineering-Contracting, June 10.

Motors, Effect of on Roads. Paper before Institution of Automobile En-gineers (England). By Douglass McKen-zie. Illustrated, 5 1-2 pp., The Surveyor, June 5.

Motor Traffic as It Affects Municipal-ities. By A. E. Jackson. 4 1-2 pp., Good Roads, June.

Horse and Its Load Wear Out Roads, How the. Comparison with automobile. Illustrated, 4 pp., The Automobile, June 18.

**Tarvia** Road Treatment in New York State and Tar Macadam in Canada. From report of Mass. Highway Commission, 3 pp., Engineering-Contracting, June 3.

Tarmatic Machine. English machine which spreads tar on roads, previously cleaning them. 3-4 p., The Surveyor, May 29.

**Pavements**, The Evolution of. Dis-cussion of Principles. By G. L. Clausen, Consulting Engineer, 1 1-2 pp., Municipal Engineering, June.

**Paving Blocks**, Iron Slag or Scoria. Their nature, construction, etc. By H. C. Innes, Consulting Engineer. 1 p., Mu-nicipal Engineering, June.

**Fillers** for Brick and Block Pavements. By C. G. Atwater. 1-2 p., Engineering-Contracting, June 10.

**Municipal Asphalt** Repair Plant of Brooklyn. Description and cost of operation. 2 pp., Engineering-Contracting, May 27.

**Concrete** Pavements in Windsor, Ont. Method and cost of constructing. 1 1-2 pp., Cement Age, May.

**Grade Crossings**, Some Benefits of the Abolition of at Newton, Mass. Illus-trated, 7 pp., Municipal Engineering, June.

**Widening** Fifth Avenue, New York. Removal of building obstructions to accommodate increased traffic. By Frank H. Morgan. Illustrated, 3 pp., Municipal Journal & Engineer, June 3.

## SEWERAGE AND SANITATION

**Sewerage** and Sewage Disposal. Tech-nical treatise. Illustrated. By H. C. H. Shenton. Local Government Journal, May 23, 30, June 6, 13, 20.

Heywood, England, Sewage and De-structor Works. Paper before Associa-tion of Managers of Sewage Disposal Works. By Joshua Bolton. Illustrated. 3 pp., The Surveyor, May 29.

Drainage and Sewerage of Havant, England. Septic tanks and contact beds. Illustrated. 4 pp., The Surveyor, June 12.

**Design of a Sewer**. General theoretical treatise. Paper before Junior Institution of Engineers. By Frank R. Durham. Illus-trated, 9 1-2 pp., The Surveyor, May 22; 11 pp., May 29.

**Sewer Ventilators**, City Gas Lamps as. Description of use in Winnipeg. Illus-trated, 1-2 p., American Gas Light Journal, June 8. 1-2 p., Acetylene Jour-nal, June.

**Outfall Sewer** Extensions in Oakland, Cal. General description of 6-foot reinforced concrete sewer. Illustrated. 1 p., Engineering Record, May 30.

**Sewer Excavation** by Steam Power at Decatur, Ill. By Ethan Viall. Illus-trated. 1-2 p., Power, June 9.

Excavators and Steam Shovels in Sewer Construction. General description. By Frank C. Perkins. Illustrated, 2 1-4 pp., Municipal Engineering, June.

**Building a Pipe Sewer** Through Quick-sand. Method and cost. Ground exca-vated by pumps. Illustrated, 1 1-3 pp., Engineering-Contracting, June 3.

**Sewer Pipe**, Stone Ware, for Carrying Sewage Under Pressure. Use of steel band joint. Illustrated, 1-2 p., Contract Journal, May 20.

**Sewage Pumping** Station and Sub-merged Force Main, Salem, Mass. 30-inch cast-iron main two miles long. By Wm. F. Bates, Resident Engineer. Illus-trated, 2 1-4 pp., Engineering News, May 28.

Norwich, England, Sewage Pumping, Reinforced Concrete Rising Main and Hydrolytic Sewage Tanks. Paper before Association of Municipal and County En-gineers. By Arthur E. Collins. Illus-trated, 9 1-2 pp., The Surveyor, June 5. 9 pp., Contract Journal, June 3.

**Sewage Disposal** Works, Chiswick, England. Proposed chemical treatment and filtration. 1-2 p., Contract Journal, May 20.

Septic Tank Users, Letter to, from Cameron Septic Tank Co. 1-4 p., Municipal Journal and Engineer, June 3.

Contact Beds and Percolating Filters at Woodford, England. Illustrated, 1 1-4 pp., The Surveyor, May 22.

Colloids in the Purification of Sew-age. Abstract of paper by J. H. John-ston in the Surveyor, May 1. 3-4 p., Engineering Record, May 30.

**River Pollution** Law, The First Case Under the Pennsylvania. Decision by State Supreme Court. 2-3 p., Engineering Record, June 20.

**Board of Health**, A National. Argu-ments favoring. 1-2 p., Municipal Jour-nal and Engineer, June 10.

Boards of Health, Expenses of Local, in Iowa. By Dr. Luis A. Thomas, Sec'y Iowa State Board of Health. 2 1-4 pp., Midland Municipalities, June.

Public Health, Guardians of the. Re-view of conditions throughout the United States. Health Boards, vital statistics, negro vitality, prejudice, impure food, etc. By Samuel Hopkins Adams. Illus-trated, 12 pp., McClure's, July.

**Typhoid** Rates in New York State. Discussion of statistics for 1907. 3-4 p., Municipal Journal and Engineer, June 3.

**Plague**, Measures to Prevent Intro-duction and Spread of. By Surgeon-Gen-eral Public Health and Marine Hospital Service. 6 1-2 pp., Public Health Re-ports, May 29.

**Tuberculosis** in Brazil. Government campaign against the disease. 1 p., Con-sular and Trade Reports, June 2.

**Milk Supply**, A Model. Full descrip-tion of Copenhagen's supply. 3 1-4 pp., The Outlook, May 30.

## WATER SUPPLY

**Water Supply** of German cities. Per capita consumption, meterage, etc. By James H. Fuertes. 2 pp., Water and Gas Review, June.

Somerville, Mass., Water Works Notes. 1-3 p., Municipal Journal and Engineer, June 3.

Meridian, Miss., and Its Water Supply. Brief Description. Illustrated, 3-4 p., Municipal Journal and Engineer, June 3.

Water Supply of Selby, England. Reservoir, pumps, etc. Illustrated, 2 1-2 pp., The Surveyor, May 29.

New Water Supply for Sydney, N. S. W. Illustrated, 1 1-2 pp., Review of Re-views, June.

Copenhagen Water Supply. Brief de-scription. Paper before Am. Water Works Association. By Prof. Wm. P. Mason. 1 p., Municipal Engineering, June.

**Improved Water Supply**, Conservation of Life and Health by. Abstract of ad-dress before Conference on Conserva-tion of Natural Resources. By Geo. M. Kober. Illustrated, 4 1-2 pp., Engineer-ing Record, June 6.

**Artesian Prediction**, Geologic Basis for. Abstract of paper before American Water Works Association. By N. H. Darton, Geologist, U. S. Geological Survey. Illustrated, 1 p., Engineering Rec-ord, May 30.

**Water Sheds**, Sanitary Patrol of. From Monthly Bulletin of N. Y. State Department of Health. 1 1-2 pp., Engi-neering Record, June 20.

**Snow Fall** Gauges, Demand for Im-provement in. 1-4 p., Municipal Journal and Engineer, June 17.

**Diversion** of Water to Distant Con-sumers. Discussion of English and Amer-i-can laws. 3-4 p., Engineering Record, June 6.

**Surplus Water**, Selling of, by Mu-nicipalities. Paper before American Water Works Association. By Geo. H. Felix. 1 1-2 pp., Fire and Water, May 27.

**Reservoir** for Bolton, England. De-scription of proposed. 1 p., Contract Journal, June 10.

Ashokan Reservoir. General descrip-tion, with recent illustrations of work done, sewerage of laborers' camp, etc. 5 pp., Engineering Record, June 13.

Reservoir, Springfield's Proposed. Large covered reservoir. Broken rock embankment. Specification details. Illus-trated, 1 1-3 pp., Municipal Journal and Engineer, June 10.

Reservoir Slope Protection of Reinforced Concrete. Reservoir bank one mile long at Fort Collins, Colorado. 3-4 p., Engineering Record, June 20.

Stripping Reservoir Lands. Experience with stripped and unstripped reservoirs. Paper before American Water Works Association. By J. M. Diven, Supt. Water Works, Charleston, S. C. 3 pp., Municipal Engineering, June.

Dam, Hydraulic-Fill, at Roland Park, Md. Brief description. Illustrated, 1-3 p., Engineering News, June 11.

Cataract Dam of Water Supply System of Sydney, N. S. W. Technical description. Illustrated, 2 3-4 pp., Engineering Record, June 6.

Pumping Machinery, High and Low Duty. Abstract of paper before American Water Works Association. By J. N. Chester. 1 p., Fire and Water, June 3.

Pumping Engines, Recent Tests of Fuel Oil. Tests of plants at Wrentham and Wareham. 1 1-4 pp., Engineering Record, June 13.

Suction Gas Producer Pumping Plant at Westford, Mass. General description and test. Illustrated, 1 1-4 pp., Engineering Record, May 30.

Producer Gas Pumping Plant at St. Steven, N. B. Operating Results of. Paper before Am. Water Works Association. By F. A. Barbour. 2 1-2 pp., Engineering Record, June 6.

Producer Gas Plant at Winnipeg, A New Municipal. General description. 1 p., American Gas Light Journal, May 18.

Air Lifts, Experiments with. Result of tests by Westinghouse Air Brake Company on driven well. 1 1-4 pp. Illustrated. Engineering Record, June 13. Illustrated, 1 p., Engineering News, June 18.

Air Lift Pumping Plant at Atlantic City, Test of. By Kenneth Allen. 3-4 p., Engineering News, June 18.

Air Pressure Pumping. Experiments on pumping by direct air pressure. Illustrated, 2 pp., Iron Age, June 11.

Incrustation of Water Pipe at Quincy, Ill., Due to Coagulants. Method of removal. Papers before American Water Works Association. By W. R. Gelston, Supt. Water Works, Quincy, and Prof. Edw. Bartow, 3 3-4 pp., Municipal Engineering, June. 3-4 p., Municipal Journal and Engineer, June 10.

Clogging and Cleaning of Water Mains. Abstract of paper before American Water Works Association. By Geo. F. Whitney. 1-2 p., Engineering Record, June 6. 1-2 p., Municipal Journal and Engineer, June 24.

Galvanized Iron, Action of Water on. Paper before American Water Works Association. By W. F. Monfort. 1 p., Fire and Water, June 10.

Steel Water Supply Conduit at Rochester, N. Y., Corrosion of the. Full details of corrosion during the last seven years. By Richard H. Gains, Chemist, New York Board of Water Supply. Illustrated. 7 pp., Engineering News, May 28.

Siphon, A large Water Works. Paper before American Water Works Association. By Howard A. Dill, Supt. Water Works, Richmond, Ind. 2 pp., Municipal Engineering, June. 3-4 p., Engineering Record, June 13.

Casting Pipes in Permanent Molds. Description of a new method. By Edgar A. Custer. Illustrated, 22 pp., Journal of the Franklin Institute, June.

Repairs to a 72-inch Steel Water Main Under 30 Feet of Water. Abstract of paper before American Water Works Association. By A. W. Cuddeback. 1 1-4 pp., Engineering Record, May 30.

Pollution of Water in Conduits Under Pressure from Outside Causes. Paper before American Water Works Association. By James M. Caird. Illustrated, 1 3-4 pp., La Technique Sanitaire, May.

Water Purification Plant at New Orleans. Brief description. Illustrated, 1 1-2 pp., Fire and Water, June 17.

Purification of Water, Direct and Indirect Methods of Electrical. Abstract of paper before Franklin Institute. By Henry Leffmann. 3-4 p., Engineering Record, June 6.

Water Filtration, Modern Methods of. Editorial statement. 1 p., The Surveyor, May 29.

Sand Filtration of Drinking Water at Chateaudun. By G. Dimitri, Chief of the Laboratory of Public Health of France (Continued). 4 pp., La Technique Sanitaire, May.

Ozone Water Treatment. Paper before the International Congress of Hygiene and Demography. By Dr. Gg. Erlwein. Illustrated, 4 1-2 pp., Gesundheits-Ingenieur, June 6.

Examination of Water, Bacteriological. Abstract of address at Municipal Building and Public Health Exhibition. By Dr. S. Rideal. 3-4 p., Contract Journal, May 27.

Bacteriological and Microscopical Examination of Water. General discussion. By W. J. Dibdin. 1-2 p., Local Government Journal, May 23.

Detector Meters, Practical Workings of. Paper before American Water Works Association. By Robt. J. Thomas, Supt. of Water Works of Lowell, Mass. Illustrated, 1 3-4 pp., Fire and Water, June 10.

Water Rates Statistics. Data from 375 cities. Paper before American Water Works Association. By Dow R. Gwynn. 3 1-4 pp., Municipal Journal and Engineer, June 17.

Collecting Water Rates. How it is done at Clinton, Mass. 1-3 p., Municipal Journal and Engineer, June 3.

American Water Works Association Convention, Stenographic Report of Proceedings. First session. 6 pp., Fire and Water, May 27; 3rd to 12th sessions, 7 pp., June 3.

**STREET LIGHTING AND ELECTRIC POWER**

Street Lighting for St. Louis. Report of Civic League Committee recommending regulation rather than municipal operation. Illustrated, 1 1-4 pp., Municipal Journal and Engineer, June 24. 3-4 p., Engineering Record, June 20.

Street Illumination at Everett, Wash. Illustrated, 1 p., Illuminating Engineer, June.

Austin, Tex., Water and Lighting Plants. Description of plant and service. Illustrated, 1 3-4 pp., Municipal Journal and Engineer, June 17.

Shady Streets, Illumination of. By H. Thurston Owens. Illustrated, 2 pp., Illuminating Engineer, June.

Tungsten Metallic Filament Lamps, Recent Progress in. Paper before Institution of Electrical Engineers of Great Britain. By H. Hirst. Illustrated, 5 1-2 pp., Electrical Review, June 13.

Electric Illuminants, Various Forms of and Their Efficiencies. Comparative illuminating power. Paper before Southwestern Electrical and Gas Association. By C. W. Kellogg. 2 pp., American Gas Light Journal, June 1. 1 1-2 pp., Progressive Age, June 1.

Lighting Values of Street Lamps. Comparative values determined by The National Electric Light Association. 1-2 p., Municipal Journal and Engineer, June 15.

Building Laws, Manchester's New. Brief abstract of. 1-2 p., Consular and Trade Reports, June 5.

Taxation, Outline of a Model System of State and Local. 3 pp., Pacific Mu-

nicipalities, May; 6 1-2 pp., Midland Municipalities, June.

**Commission System of Government.** Discussion concerning. 1 1-2 pp., Revista-Municipal, June 1.

**Galveston Plan Successful.** Working of system after four years' operation. By Ernest S. Bradford. 1 3-4 pp., Municipal Journal and Engineer, June 3.

**Ward Representation.** Reply to E. S. Bradford's article. By John S. Hodgson. 1-4 p., Municipal Journal and Engineer, June 17.

**Municipal Bill for Saskatchewan.** Outline of proposed bill for rural organization. 3 pp., Western Municipal News, June.

**Currency Law.** Digest of New National. Explanation by Ex-Deputy Comptroller George M. Kauffmann. 3 pp., The Financier, June 8.

**Financial Reports, Municipal.** What they should show. 1-2 p., Municipal Journal and Engineer, June 24.

**City Comptroller's Reports.** Examples of balance sheets and details of Atlantic City's report. 2 1-2 pp., Municipal Journal and Engineer, June 3.

**Depreciation.** Reply to A. M. Hunt and C. D. Stuart, City Engineer and Accountant, by John A. Britton, president San Francisco Gas and Electric Company. 1 p., Progressive Age, June 15.

**Business Methods for Cities, Better.** 1 p., Midland Municipalities, June.

**Bond Sales During April, Including Financial Statistics.** 1 p., Municipal Journal and Engineer, June 3.

**Municipal Bonds and New Currency Law.** Comment on New National Law. 1-2 p., Municipal Journal and Engineer, June 17.

## STREET CLEANING AND REFUSE DISPOSAL

**Street Cleaning in St. Louis.** Organization of department and machines used. By Chas. Claude Casey. 1 1-2 pp., Municipal Journal and Engineer, June 10.

**House Refuse.** Coalesine Fuel from Paper read at Municipal, Building and Public Health Exhibition. By Herbert G. Coales. 1 p., Contract Journal, May 20.

**Disposal of House Refuse by Crushing.** Cost, returns from sales, etc. Paper read at Municipal, Building and Public Health Exhibition. By A. Harrison. 3-4 p., Contract Journal, May 20; 1 p., Municipal Journal and Engineer, June 24.

**Refuse Destructor and Electrical Generating Station at Greenock, England.** Technical description of Horsfall plant. Illustrated, 1 p., Engineering Record, June 6.

**Wood-Green Refuse Destructor.** History and description. 1 1-2 pp., Municipal Journal and Engineer, June 5; illustrated, 1 p., Contract Journal, June 3.

**Transportation of Ashes and Rubbish in Philadelphia.** Collected by carts, removed by street railway. 1-4 p., Engineering Record, June 20.

## PARKS AND OUTDOOR ART

**Parks, Value of.** From the horticultural point of view. 1-2 p., Gardening, June 15.

**Seward Park.** Difficulties of maintaining order and their solution. By Julia Richman. 4 pp., Charities, May 30.

**Chicago Parks and Their Landscape Architecture.** Pergolas, boathouses, etc. Illustrated, 12 pp., Architectural Record, July.

**Landscape Gardening in Japan.** With many practical examples. By Edmond Buckley. Illustrated, 9 pp., House and Garden, July.

**Montreal, Plan for Improvement of.** Improvement scheme, including park

and playground. Illustrated, 3 pp., Canadian Municipal Journal, June.

**Planning of Gwinn.** General principles employed in planning new town. 3-4 p., Municipal Journal and Engineer, June 17.

## TRAFFIC AND TRANSPORTATION

**Subway.** Capacity of the New York, Report on the. By Bion J. Arnold. Illustrated with diagrams. 5 3-4 pp., Street Railway Journal, May 30.

**Tunnel, Washington Street, Boston,** Engineering Features of. 3-4 p., Electric Railway Review, May 30.

**Rapid Transit Systems, The Problem of Capacity in.** Discussion of report of B. J. Arnold on the New York Subway. Illustrated, 2 pp., Engineering News, June 4.

**Regulation, Street Railway.** Abstract of report of District of Columbia Committee on Fares, Paving, etc. 1 p., Pacific Municipalities, May.

**Taxicabs in London, Increasing Use of.** 1-2 p., Consular and Trade Reports, May 27.

## MISCELLANEOUS

**Description of Cities, Fort Worth and Dallas, Texas.** Notes from. Illustrated, 1 1-4 pp., Municipal Journal and Engineer, June 24.

**Galveston's Reconstruction.** Sea wall, raising grade, paving, etc. Illustrated, 1 1-4 pp., Municipal Journal and Engineer, June 10.

**Galveston, Resurrection of.** Popular description. By Geo. Wharton James. 12 pp., The Arena, April.

**San Antonio, Picturesque.** Popular description of a Texas city. By Geo. Wharton James. Illustrated, 11 pp., The Arena, May.

**San Francisco Two Years After** from a Physical and Commercial Standpoint. By Colvin B. Brown. Illustrated, 2 pp., Review of Reviews, June.

**Rochester.** Brief popular description. 3 pp., Leslie's Weekly, June 11.

**New Orleans Paving and Belt Railroad.** Illustrated, 1 1-4 pp., Municipal Journal and Engineer, June 3.

**Sofia, Bulgaria, Ancient and Modern.** General description. 1 1-4 pp., Revista-Municipal, June 1.

**Tenements, New York's Improved.** By John W. Russell. Illustrated, 4 pp., House and Garden, July.

**Charles River Dam, Boston, The Lock in.** By Walton H. Sears. Illustrated, 3 pp., Engineering Record, June 13.

**Municipal Engineering at Gary, Ind.** By W. L. Hammonds. 2 1-4 pp., Municipal Engineering, June.

**Smoke Abatement in Chicago.** Steps proposed. 1-3 p., Engineering News, June 18.

**Smoke Prevention.** Brief statement of conditions in fourteen United States cities. 2 pp., Canadian Municipal Journal, June.

**Cost Keeping System for Street Improvement Work.** Blanks used by a contractor. 3-4 p., Engineering-Contracting, June 10.

**Elections, Muddling the Issues in City.** The part the machine plays in this. By H. F. Haskell. 5 pp., The Outlook, June 20.

**Right to Information, The People's.** Boston officials deny this. 1-4 p., Municipal Journal and Engineer, June 3.

**Reinforced Concrete in Municipal Engineering.** Paper read at Municipal, Building and Public Health Exhibition. By W. Noble Twelvetrees. 1 p., Contract Journal, May 20; 1 1-2 pp., The Surveyor, June 12.

**Concrete Construction, The Value of Sand in.** Report to National Associa-

tion of Cement Users. By E. S. Larned. 2 pp., Good Roads, June.

**Portland Cement, The Life of.** Paper before Iowa Brick and Tile Association. By G. G. and A. J. Wheat. Argument that moisture dissolves cement mortar. Illustrated. 6 pp., Clay Record, May 15.

**Societies and Conventions.** Value of technical societies. 1-3 p., Municipal Journal and Engineer, June 17.

## BOOK REVIEWS

**Conversations on Electricity.** By Joseph B. Branch, B.S., M.E. Chicago and New York: Rand, McNally & Co. 252 pp., 105 illustrations. Cloth, \$2.

This book is intended to help practical men without technical education to gain some general theoretical knowledge of the principles of electricity. As such the author's method of explaining a subject by means of questions and answers fills the purpose very well. Some of the author's explanations of fundamental ideas of force and matter, such as the statement that gravity is the downward pull of the earth, might come as a shock to a man who had spent a lifetime in studying natural science, but they answer the purpose for which they are intended. To the non-technical reader desiring to acquire some knowledge of electricity and electrical machinery we have no hesitation in recommending Mr. Branch's book.

**Pawtucket, R. I., City Auditor's Report and Annual Budget.** Geo. M. Rex, City Auditor.—This report, for the year ending December 31, 1907, is presented in the classified form of the National Bureau of the Census, following this in all its details throughout. A number of cities have adopted this form for

making out their annual audits, and it is certainly greatly to be hoped that it will be adopted by all cities in a very short time. Only when this time shall have arrived will it be possible to make anything like a definite comparison between cities. Not only that, but the use of such a form would greatly simplify the studying of the report of any city by one not familiar with the particular form it now uses; since, once having mastered the standard form, no time would be wasted in endeavoring to study out the intricacies of the various systems employed. There is contained in this report a statement of the bonded indebtedness of the city, giving all the details of each issue, the amount outstanding, the sinking fund, appropriations, etc. A net bonded and floating debt of \$3,878,822.89 was shown. An exact description is given of all the real estate owned by the city, with its assessed valuation; also the personal property of the different departments. Incompleted city contracts, balances of appropriations, accounts receivable, all are tabulated according to a system easily understood, so that any one at all familiar with financial matters can obtain an exact knowledge of the financial condition of this city or of any department thereof.

Even more unusual than the Auditor's report on the standard form of the census is the Budget for the year beginning January 1, 1908, which is classified on the same lines as the audit for 1907. The estimates for each department and each service and material are given in detail, classified by the method which the audit has made familiar, and thus permitting every citizen to learn with little effort exactly how it is expected to spend the city's income during the current year.

## NEWS OF THE SOCIETIES

**American Association of Park Superintendents.**—The association will hold its annual convention in Minneapolis, Minn., August 11-13, and the Park Board of the convention city has appointed a special committee of five members and the Superintendent to work out an interesting program and provide for the welfare and entertainment of their visitors. The association has never met further west than Buffalo, and Minneapolis will spare no pains to justify its claim as the ideal convention city of the great Northwest. As a park city, Minneapolis stands second to none in the country, and while its system of parks and parkways is far from completion and perfection as compared with the systems of the older cities of the East, the possibilities offered by its present park possessions and through completed extensions will convince every visitor that Minneapolis will have one of the grandest system of parks, parkways and boulevards in the country. The many fine lakes, the grand drives along the wooded banks of the Mississippi river and Minnehaha falls and creek, the many parkways through the residential parts of the city and the many smaller parks, must of necessity attract and gratify every visitor interested in park work and development.

The following preliminary program has been prepared and will, in the main, be carried out:

Headquarters: West Hotel, Hennepin avenue and Fifth street.

First Day—Tuesday, 9.30 a. m.: Opening of session, Park Commissioners' office, City Hall, Third avenue and Fifth street. Address of Welcome by His Honor the Mayor, James C. Haynes and Hon. Jesse E. Northrup, President of the Board of Park Commissioners. Response by J. F. Cowell, President of the American Association of Park Superintendents. Business meeting. 12.15 p. m.: Automobile ride to Minnehaha Club, Lake Calhoun, by way of Park avenue, to Powderhorn Lake Park and Lake street. 12.45 p. m.: Luncheon at Clubhouse. 2 p. m.: Reading of essays and discussions at the Clubhouse. (An interesting programme for this session is being prepared, and the names of the essayists and the subjects of the essays will be sent out with the final programme some time in July.) (The Minnehaha Clubhouse grounds offer a splendid view over Lake Calhoun, Lake of the Isles, and the city, and it is an ideal meeting place for the discussion of park matters and landscape study.) 7 p. m.: Start from hotel by trolley car for Lake Harriet. Concert and sail on lake.

Second Day—Wednesday, 9 a. m.: A 35-mile automobile trip around the Park system. Start from headquarters, Fairview Park, Glenwood Park, Loring Park, Kenwood Parkway, Lake of the Isles (inspect orange peel, dipper and hydraulic dredges at work), Lake Calhoun, Lake Harriet, Lyndale Farmstead (greenhouses and administration plant), Minnehaha Parkway, Fort Snelling and Minnehaha Park. 12.30 p. m.: Luncheon at Minnehaha Pavilion. 1.30 p. m.: Photo taken at foot of Minnehaha Falls. Stroll through glen and park. 2.30 p. m.: Continue automobile ride to River road west, Riverside Park, Franklin avenue bridge, River road east, University, Van Cleve Park, Columbia Park, Logan Park, and arrive at headquarters at 5.30 p. m. 8 p. m.: Banquet.

Third Day—Thursday, 9 a. m.: A trip to Minnesota's finest lake, beautiful Lake Minnetonka. Special cars in front of West Hotel headquarters. 10 a. m.: Arrive at Excelsior. Special boat for two hours' sail around Lake Minnetonka. 12.30 p. m.: Luncheon at Big Island or Tonka Hotel. Rest awhile. 3 p. m.: Final: Business session. 4 p. m.: Steamer to Excelsior. 4.30 p. m.: Special cars for return trip.

Lake Minnetonka with its water area of 30 square miles, its 110 miles of wooded and open shores and background of rolling land, its numberless bays, narrows and islands, is most picturesque of the thousands of named lakes in the State of Minnesota. It is one great park, attractive and fascinating from every point of view. The Park Board and dif-

ferent organizations of the convention city will act as hosts of the society, providing for the entire entertainment herein outlined. The morning trains from all directions arrive between 8 and 9, and the evening trains leave between 8 and 9, so that it will be possible for all members to come to the convention, to attend the program from beginning to end. It was originally intended to make this convention a Twin City affair, but the St. Paul authorities withdrew from participation and may extend a separate invitation to visit their park system. For that purpose the fourth day of the original mapped out four-day meeting would be available. The officers of the association and the Minneapolis people are in hopes that this convention will be well attended, and the fact that the convention city is about half way between the two coasts should be an inducement to all Park Superintendents and other officers of park administration to meet for deliberation, study and advancement of park development and maintenance in all its many branches and needs.

**League of American Municipalities.**—The twelfth annual convention, which will be held at Omaha, promises to be one of the most interesting in the history of the organization. The exact date has not been definitely fixed, the final choice being between the first and the last week of September. Either the 8th, 9th and 10th, or the 23rd, 24th and 25th of September will be the dates chosen. Among the subjects that will appear in the program for discussion, the following have been advocated by several of the trustees: "Regulation of Public Service Franchises," "Home Rule for Cities," "Uniformity of City Reports," "The Liquor Problem in Our Cities." There will probably be one or two more subjects of importance, but it is the intention to limit the number of papers so as to leave ample time for a thorough discussion of each question.

**Playground Association of America.**—George B. McClellan, as Mayor of New York and Honorary President of the Play Congress of the Playground Association of America, which is to meet in this city on September 8, has sent the following letter to the Mayors and officials of the Departments of Parks, Health, Charities and Education of all the cities of the United States:

The Playground Association of America will hold its second annual congress in this city, from the 8th to the 12th of September of this year. The purposes of this association are to provide wholesome play for children, particularly those of the cities. The congress will discuss hours, space, methods and other matters concerning the healthful recreations of youth with a view to providing such conditions as children are no longer able to obtain for themselves.

I therefore venture to invite you personally to attend the Playground Congress, and, through you, to invite such of your city officials as may aid in a discussion of these topics and profit by it. Officials connected with your department of parks, education, charity, etc., will find in the congress important topics for their consideration—topics that demand cooperative discussion as well as action.

**Minnesota State Firemen's Convention.**—The use of the automobile in Fire Departments was a topic for discussion at the recent convention. J. P. Barrett, Captain of Engine Company No. 1, Minneapolis, showed the results in a number of cities. In Captain Barrett's opinion, the auto as a Fire Department vehicle is no longer an experiment, as all apparatus, from the heaviest engines to the lightest hose wagons, can be propelled with especially equipped auto engines with better success than is now obtained by the use of horses. With good care,

he says, there will be no more breakdowns than when horses are employed, and when speed and the additional distance covered by the auto are considered, the odds are greatly in favor of the latter. In St. Louis, Captain Barrett learned that an auto salvage wagon made 30 runs in one month at a cost of \$3.69. Four horses formerly did the work at a cost of \$60. The machines have been given severe tests in other cities and have made good in every case. They have given greater speed and have never failed to make any grade made by the horses. The time will soon come, Captain Barrett thinks, when not only the cities will be equipped with the gasoline motor-propelled apparatus, but it will be used by the volunteer departments.

**Playground Association of Scranton.**—A certificate of incorporation has been filed in the office of the Prothonotary Bunnell, Scranton, Pa., by the Playground Association of Scranton. The certificate specifies that the object and purpose of the association "is to establish and maintain as a benevolent undertaking free public playgrounds and to promote by education means for the ownership and maintenance of such playgrounds by the city of Scranton." The subscribers are: C. R. H. Jackson, Rev. Rogers Israel, D. D.; H. W. Kingsbury, D. L. Morgan, A. B. Cohen, R. E. Weeks, Rev. Joseph Odell, D. D., J. M. Wainwright, B. L. Lathrop, J. Benj. Dimmick and Rt. Rev. M. J. Hoban.

## Calendar of Meetings

June 29-July 2.

**American Institute of Electrical Engineers.**—Annual convention, Atlantic City, N. J.—Ralph W. Pope, Secretary, 33 West 39th St., New York City.

July 6.

**Good Roads Congress.**—First national meeting, Denver, Col.

July 24-25.

**American Society of Heating and Ventilating Engineers.**—Summer meeting, Niagara Falls, N. Y.—W. M. Mackay, Secretary, P. O. Box 1818, New York City.

August 10-12.

**International Acetylene Association.**—Eleventh Annual Meeting, Chicago, Ill.—A. Cressy Morrison, Secretary.

August 11-14.

**American Association of Park Superintendents.**—Annual meeting Minneapolis, Minn.—F. L. Mulford, Secretary, Harrisburg, Pa.

August 25-28.

**International Association of Fire Engineers.**—Annual convention, Columbus, O.—James McFall, Secretary, Roanoke, Va.

September 8-12.

**Playground Association of America.**—Second annual congress, New York City.

September 21-October 12.

**National Association for the Study and Prevention of Tuberculosis.**—International Congress, Washington, D. C.—Dr. Henry Barton Jacobs, Secretary, Baltimore, Md.—Dr. Joseph Walsh, Philadelphia, Pa. Special Secretary of the Committee on the International Congress.

September 23-25.

**New England Water Works Association.**—Annual convention, Atlantic City, N. J.—Willard Kent, Secretary, Narragansett Pier, R. I.

September 8-10 or 23-25.

**League of American Municipalities.**—Twelfth annual convention, Omaha, Neb.—John MacVicar, Secretary, Des Moines, Ia.

September.

**New Jersey State Firemen's Association.**—Annual meeting, Atlantic City, N. J.—William Exall, Secretary, 11 Howard street, Newark, N. J.

October 11.

**International Roads Congress.**—First convention, Paris, France.—President Léthier, l'Inspecteur General des Ponts et Chaussees.

October 12-17.

**American Street and Interurban Railway Association.**—Twenty-seventh annual meeting, Atlantic City, N. J.

October 20-23.

**American Society of Municipal Improvements.**—Fifteenth annual convention, Hotel Dennis, Atlantic City, N. J.—A. Prescott Folwell, Secretary, 239 West Thirty-ninth street, New York City.

## THE WEEK'S CONTRACT NEWS

**Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Buildings, Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards**

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>Street Improvements</b>				
Ohio	Delaware	July 2, noon	Brick paving on crushed stone, etc., W. Wm. St., 20,000 yds.	R. M. Swickhermer, Bd. Pub. Serv.
New York	Northport, L. I.	July 2, noon	Imp. Main st., inc. 12,000 sq. yds. Peekskill gravel, 1,300 of brick, and 1,100 granite; 1,400 ft. blue st'n curb, 1,400 ft., 18-in. sew.	John Deveau, Village Clerk.
New York	New York	July 2, 3 P.M.	Furn. 500 cu. yds. blue limestone screenings.	Henry Smith, Pres. Park Bd.
Montana	Bozeman	July 2, 7:30 P.M.	Constructing 25,000 sq. yds. concrete pavement.	H. H. Holloway, City Clerk.
Wisconsin	Racine	July 3, 10 A.M.	Brick pav. 27,793 sq. yds.; stone curb, 11,300 lin. ft., Wash. St.	P. H. Connolly, Chm. Bd. Pub. Wks.
Colorado	Silver Cliff	July 3, noon	Bldg. and repairing one mile road, Quevedo to Whetmore.	T. W. Jaycox, Denver State Eng'r.
Ohio	Alliance	July 3, noon	Grading, paving, curbing, etc., 6 sts, 49,000 cu. yds., exc.	C. E. Swearingen, Clk. Bd. Pub. Ser.
Ohio	Cincinnati	July 3, noon	Improving several pipe roads.	Fred Drehs, Clk. Co. Com'r's.
Tennessee	Clinton	July 3, 1 P.M.	Bldg. 38 miles road and \$5,000 work, grade and macadam.	J. K. P. Wallace, Chm. Trustees.
Wisconsin	Waukesha	July 3, 2 P.M.	Macadamizing Hartwell Ave.	John P. Dey, Chm. Bd. Pub. Wks.
Wisconsin	Waukesha	July 3, 2 P.M.	Macadamizing Hartwell Ave., fr. B'way to College Ave.	John P. Dey, Chm. Bd. Pub. Wks.
New Jersey	Elizabeth	July 3, 2:30 P.M.	Bldg. 5,495 lin. ft., 16 ft. wide 8-in. macad'm rd. (9,587 sq. yds.)	F. J. Hubbard, Plainfield Co. Eng'r.
New Jersey	Plainfield	July 3, 2:30 P.M.	Bldg. macadam road, inc. 770 cu. yds. earth exc., 4,054, embankment; 9,587 sq. yds. 8-in. macadam.	F. J. Hubbard, County Engineer.
Ohio	Lockland	July 3...	Bldg. cement sidewalks, Harriet St.	C. E. Tray, Village Clerk.
Ohio	Washington	July 3...	Asphalt paving, 5 contracts: \$179,000, \$223,700, \$149,500, \$62,000 and \$115,000.	R. H. Thomson, City Engineer.
Ohio	Portsmouth	July 3...	Brick paving, curb, grading, etc., Washington St.	Board of Public Service.
Indiana	Columbus	July 6, 10 A.M.	Bldg. 3,689 ft. macadam road in Wash Creek tp.	John M. Davis, County Auditor.
Indiana	Tipton	July 6, 10 A.M.	Bldg. 3 gravel roads: 13,121, 11,075 and 5,869 ft. long.	J. F. Barlow, County Auditor.
Indiana	Richmond	July 6, 11 A.M.	Grading, paving, curbing, etc., hwy in Wayne tp.	D. S. Coe, County Auditor.
New Jersey	Camden	July 6, 11 A.M.	Macadamizing 2.4 miles Blkwdtn. twp., using asphaltum oil for binder; also gravel binder on 1 1/2-in. stone.	J. J. Albertson, County Engineer.
Ohio	Mansfield	July 6, noon	Macadamizing and paving 16,085 ft. of road, Weller tp.	C. A. Magon, Tp. Clk., R. F. D. No. 2
Pennsylvania	Wilkes-Barre	July 6, noon	Repairing 3 macadam roads.	Jas. M. Norris, County Controller.
Ohio	Zanesville	July 6, noon	Paving and curb, Lincoln Ave., fr. Woodlawn to Moxahala Av.	J. T. Hahn, Clk. Bd. Pub. Ser.
Indiana	Greensburg	July 6, 1 P.M.	Constructing several gravel roads.	Frank E. Ryan, County Auditor.
Indiana	Indianapolis	July 6, 1 P.M.	Constructing a public highway.	Chas. A. Miller, County Auditor.
New Jersey	Salem	July 6, 2:30 P.M.	Bldg. 4.76 miles Alloway and Aldine road.	John F. Ayres, Dir. Co. Freeholders.
Pennsylvania	Bentleyville	July 6, 4 P.M.	Brick paving, 3,300 sq. yds.; curb, 3,500 lin. ft., exc. 3,000 cu. yds.; 12-in. sewer, 900 ft.; 8-in., 300 ft., etc.	C. Hanlon, C. E., Monongahela.
Minnesota	Chaska	July 6, 7:30 P.M.	Laying 16 cement crossings; also cement or brick walk.	J. M. Aretz, City Clerk.
Iowa	Hampton	July 6, 8 P.M.	Vit. brick paving, 15,000 sq. yds.; concrete curb, 4,500 lin. ft.	C. R. Allen & Son, C. E. Ottumwa
Minnesota	St. Paul	July 6...	Improving portion of Bald Eagle Lake Ave.	Edw. G. Krahmer, County Auditor.
Indiana	Decatur	July 6...	Constructing 3 or 4 macadam roads.	County Commissioners.
Iowa	Fort Dodge	July 6...	Setting 2,500 lin. ft. cement curb and gutter.	Chas. H. Reynolds, City Engineer.
Ohio	Youngstown	July 6...	Improving 3 roads: 8,267 ft.; 6,344 ft.; 3,640 ft.	County Commissioners.
Ohio	Jefferson	July 6...	Bldg. \$20,000 macadam road in Conneaut.	W. H. Bradshaw, City Eng'r.
Indiana	Delphi	July 6...	Heavy street grading, sidewalk, etc., cost, \$9,500.	C. C. Hanlon, Boro Eng'r.
Pennsylvania	Worthington	July 6...	Brick paving, 3,300 sq. yds.; 900 ft. sewer.	W. B. Dryden, Sec'y Bd. Pub. Imp.
Missouri	St. Louis	July 7, 10 A.M.	Opening and widening several alleys.	W. H. Myers, County Auditor.
Ohio	Wapakoneta	July 7, 10 A.M.	Grading, bldg. culverts and graveling Montague Pike.	J. M. Williams, County Auditor.
Ohio	Marietta	July 7, noon	Improving Marietta-Waterford road.	A. J. Callow, Sec'y Bd. Pub. Serv.
Ohio	Cleveland	July 7, noon	Grading, draining, paving, etc., Kinsman rd., S. E. viaduct.	Board of Public Service.
Ohio	Cincinnati	July 7, noon	Wood block paving, grading, granite curb, Bank St.	Ray L. Jordan, Village Clerk.
Ohio	Richwood	July 7, noon	Paving Franklin St. with vit. brick.	R. Fendall Smith, County Eng'r.
New Jersey	Cape May	July 7, noon	Bldg. 2,907 miles gravel road on Rio Grande road.	
Ohio	Cleveland Hei'ts	July 7, noon	Grading, sewering and laying 6-in. water pipes in Euclid Blvd.; Compton and Highland roads; W. G. Phare, Vil. Clk.	F. A. Pease, Eng. Co. Cleveland.
Indiana	Jasper	July 7, 1 P.M.	Constructing 4 miles of gravel roads.	A. M. Sweeney, County Auditor.
Indiana	Rockville	July 7, 1:30 P.M.	Constructing Leatherwood gravel road in Wahash tp.	H. A. Henderson, County Auditor.
Indiana	Paoli	July 7, 2 P.M.	Constructing 13,288 ft. gravel road in Paoli tp.	A. B. Ham, County Auditor.
Indiana	Vincennes	July 7, 2 P.M.	Bldg. gravel road; 13,110 ft. Palmyra, 14,133 ft. Johnson twp.	John T. Scott, County Auditor.
Wisconsin	Rhineland	July 7, 2 P.M.	Macadam 18,890 sq. yds., com'b. curb and gutter, certain sts.	Geo. C. Jewell, Clk. Bd. Pub. Wks.
Indiana	Bloomfield	July 7, 2 P.M.	Constructing gravel roads for County.	Green County Commissioners.
Indiana	Martinsville	July 7, 2 P.M.	Constructing several gravel roads.	B. E. Thornbury, County Auditor.
Illinois	Aurora	July 7, 2 P.M.	Brick paving and combined curb and gutter.	M. J. Tarble, City Engineer.
Kentucky	Paducah	July 7, 3 P.M.	Paving, 2,000 sq. yds., 10th St.; br'k, asphalt, bitulithic.	L. A. Washington, City Engineer.
Pennsylvania	Belleview	July 7, 6 P.M.	Grading, curbing, paving, Riverview, Rodgers Ave., Jeff'son St.	J. M. Simeral, Boro Clerk.
New Jersey	Bayonne	July 7, 8 P.M.	Flagging on 9th St., concrete walk, 27th St., etc.	W. C. Hamilton, City Clerk.
New York	Auburn	July 7, 8 P.M.	Asphalt paving Village St., from Genesee to South St.	J. S. Hanlon, City Clerk.
Indiana	Versailles	July 7...	Constructing 3 macadamized roads.	Ripley County Commissioners.
Ohio	Marion	July 7...	Paving Silver Street with brick or block.	C. H. Tobin, Clk. Bd. Pub. Serv.
Tennessee	Jackson	July 7...	Laying 25,000 sq. ft. cement walk, 4,500 lin. ft. curb and gutter.	Atwell Thompson, City Engineer.
Ohio	Muncie	July 7...	Brick paving on Silver street.	Geo. E. Dwyer, City Engineer.
Indiana	Peru	July 8, 10 A.M.	Constructing 4 gravel roads in Washington township.	Joseph E. Davis, County Auditor.
Ohio	Alliance	July 8, noon	Constructing 18 gravel roads.	Chas. Griswold, County Auditor.
Massachusetts	Lawrence	July 8, noon	Grading, paving, curbing, etc., S. Lincoln and Patterson Sts.	C. E. Swearingen, Clk. Bd. Pub. Serv.
Pennsylvania	McKeesport	July 8, 3 P.M.	Paving 28,000 sq. yds. with wood block, on concrete base.	A. D. Marble, City Engineer.
Pennsylvania	Danville	July 8, 4 P.M.	Constructing cement walks in East Park, Sixth Ward.	C. E. Soles, City Controller.
Ohio	Jefferson	July 9, noon	Filling portion of Penna. canal, 19,500 cu. yds. in hosp. grounds.	Dr. H. B. Meredith, Supt. St. Hosp.
Ohio	Poland tp.	July 9, 1 P.M.	Grading and macadamizing 2.07 miles road Conneaut tp.	J. C. Rogers, Chm. Bd. Co. Com'r's.
Ohio	Clarksville	July 9, 2 P.M.	Grading and macadamizing road 13,362 ft. long.	W. J. Morris, Township Clerk.
Ohio	Cincinnati	July 10, noon	Paving seven streets.	Fred Drehs, County Clerk.
Tennessee	Rogersville	July 10, 1 P.M.	Road work in County.	F. G. Phillips, Civil Eng'r.
Indiana	Rushville	July 10...	Grading 80 to 92 miles of road; macadamizing, 20 miles.	A. L. Stewart, County Engineer.
Indiana	Crawfordsville	July 11, 10 A.M.	Bldg. macadamized road bet. city and White River bridge.	Montgomery County Com'r's.
Ohio	Cheviot	July 11, noon	Constructing Kleiser gravel road in Boone Township.	Charles Craig, Village Clerk.
Dist. of Col'bria	Washington	July 11, noon	Macadamizing, curb, grading, etc., Apple Gate road.	Jay J. Morrow, Eng'r Com'r.
Colorado	Telluride	July 11, noon	Paving 8 sts. with asphalt block; 17 with sheet asphalt.	T. W. Jaycox, Denver, State Eng'r.
Ohio	Woodsfield	July 11...	Bldg. and repairing 43m. road to Norwood Hill, San Mig. Co.	Geo. P. Dorr, Village Clerk.
Texas	San Antonio	July 11...	Brick paving, grading, sewering, curbing, Church and Wash. Sts.	
Wisconsin	Oshkosh	July 13, noon	Brick, asphalt or bitu. paving, 21,000 sq. yds., inc. space of st. car tracks and 7,000 lin. ft. curbing.	Fred Fries, City Clerk.
Alabama	Mobile	July 13, noon	Grading, macadamizing, comb. curb and gutter, Vine St.	W. A. Marden, Chm. Bd. Pub. Wks.
Wyoming	Lander	July 14, 8 P.M.	Wood block paving, 34,712 sq. yds. and 2,966 ft. granite curb, grading, etc.; vit. brick, 2,902 sq. yds., 2,582 ft. granite curb, etc.; cement curb, 11,744 lin. ft., inc. grading, etc.	Wright Smith, Ch. Eng'r. B. P. W.
Ohio	Cleveland	July 15, 11 A.M.	Grading and surfacing 4,928 ft. Main St., req. 10,082 cu. yds.	J. C. Edsall, Town Engineer.
			Grading, draining and improving N. Miles Ave. and Cannon road.	A. B. Lea, County Eng'r.

## Street Improvements—Continued

Pennsylvania	Phillipsburg	July 15	Brick paving, 3,500 sq. yds., Pine and Laurel Sts.	Geo. H. Ayers, Boro. Engineer.
Ohio	Cincinnati	July 16	Improving North Miles Ave.	A. B. Lea, County Surveyor.
Ohio	Cincinnati	July 17, noon	Improvement of Varner and other roads.	Fred Dreis, Clk. Co. Com'rs.
Florida	Palatka	July 21	Constructing 8,500 sq. yds. granolithic sidewalks.	J. E. Craig, City Engineer.
Colorado	La Jura	July 22, noon	Bldg. and repairing 5½ miles wagon road at Sandford.	T. W. Jaycox, Denver, State Eng'r.

## Water Supply

Ohio	Newton Falls	July 2, noon	Furn. 240 tons, 4, 6, 8-in. c. i. pipe, 3 tons specials, fire plugs, exc. and laying of pipes.	Carl W. Smith, Clk. Bd. Pub. Serv.
Texas	Galveston	July 2, noon	Furn. and erect. complete at Alta Loma, mech. equip. of air-lift pump. station, inc. 1,200 cu. ft. air compressors; 200 h. p. water-tube boilers, inc. 16,615 ft. air pipe.	H. C. Lange, Com'r. W.W. & Sewer.
Nebraska	Morse Bluff	July 2	Constructing water system, inc. deep well, pump mains, etc.	Frank Kaplan, Ch'm. Village Bd.
Virginia	Manchester	July 2	Two 150 h. p. water-tube boilers for 150 lbs. pumping pressure.	C. H. Sharp, Supt. Water Dept.
Iowa	Ricketts	July 6, 7:30 P.M.	Constructing a water works system.	J. C. Jacobson, Mayor.
Pennsylvania	Steelton	July 6	Extending intake pipe at borough pumping station.	Water Board.
North Dakota	Carrington	July 6	Furnishing 6,000 ft. 6-in. pipe, special hydrants, etc.	H. L. Winterer, City Auditor.
Illinois	Batavia	July 6	Furn. material and laying 17,000 ft., c. i. water mains, 18 hydrants, valves, boxes, etc.	Water Committee.
California	Vuila Pt. Harford	July 7, 10 A.M.	Fifty-year franchise to lay and operate water wks. in town.	H. H. Carpenter, Clk. Bd. Superv.
Ohio	Cleveland Hg'ts.	July 7, noon	Laying 6-in. water main and grading 3 roads.	W. G. Phare, Village Clerk.
Ohio	Toledo	July 7, noon	Labor and mat. for concrete intake pier, pipe, gate house, etc., for Toledo filtration works, 2-mile cor. c. conc. uit, \$200,000.	Reynold Voit, Secy. Bd. Pub. Serv.
Iowa	Cherokee	July 7, 5 P.M.	Furn. and laying 1,600 ft. 4-in. c. i. pipe, etc.	Wm. Sharlow, City Clerk.
Wisconsin	Sturgeon	July 7, 8 P.M.	Constructing water works and electric light plant.	A. C. Greaves, City Engineer.
Wisconsin	So. Milwaukee	July 7, 8 P.M.	Engr's services for extending water works and sewerage.	P. Knoll, Chm. Water Wks. Ccm.
Massachusetts	Concord	July 8, 10 A.M.	Laying c. i. pipe and appurtenances, and bldg. reservoir.	Metcalf & Eddy, 14 Beacon St. East.
Georgia	Atlanta	July 8, 4 P.M.	Three 300 h. p. horiz. water tube boilers, 200 lbs. pressure, erected, bricked in, on found. furn. by city.	Park Woodward, Gen. Mgr. Water Bd.
Ontario	Ottawa	July 8, 4:30 P.M.	Constructing a movable dam at St. Ar drews Rapids.	Fred. Gelinas, Sec'y Dept. Pub. Wks.
Illinois	Chicago	July 8	Furnishing centrifugal pumps, induction motors, high pressure unit, lead covered cable.	R. R. McCormick, Pres. Sanitary Dis.
West Virginia	Clarksburg	July 10, noon	Furn. and laying 4,800 ft., 12-in. c. i. water pipes, complete.	Will H. Cole, City Clerk.
Massachusetts	Manchester	July 10, 8 P.M.	Furn. 443 tons 16-in. c. i. pipe, Class E., N. E. W. W. Ass'n, 523 tons, 14-in.; 12 tons specials, f.o.b., Manchester.	F. J. Merrill, Chm. Water Com'rs.
Pennsylvania	Reading	July 10, 7:30 P.M.	Constructing Bernhart filters; E. L. Nuebling, Supt.	Edward Elbert, Pres. Bd. W. Com'rs.
Washington	Seattle	July 11	Second unit, Cedar River water supply system, inc., sub-div. No. 1 main pipe line, \$1,250,000; Beacon Hill reservoir, \$200,000; Green Lake reservoir, \$80,000.	R. H. Thomson, City Engineer.
Ohio	Cincinnati	July 13, noon	Sale of boilers, pumping engines, deep well pumps, boiler feed pumps, engines, tools, etc., at 6 pumping stations.	John J. Werner, Clk. B. P. S.
Iowa	Templeton	July 20, noon	Constructing water system; extra foun., June 6.	M. J. Daeges, Town Clerk.
Ohio	Oxford	July 20	Lab'r and ma. for const'ng. w. sup. and fire lines at Miami Univ.	Board of Trustees, Miami Univ.
Texas	Houston	July 27, 3 P.M.	Erecting 15,000,000-gal. pumping engine with plans, etc.	H. B. Rice, Mayor.
California	Los Angeles	July 27	Bldg. Jawbone div. Los Angeles aqueduct, cap. 400 second ft., inc. 43,000 lin. ft. lined tunnel; 60,000 ft. lined conduit; 340,000 cu. yds. excavation, etc.	H. B. Ferris, Bd. Pub. Wks.

## Sewerage

Ohio	St. Bernard	July 2, noon	Constructing sewer in Carthage pike, 275 ft.	J. A. Stewart, Village Eng'r.
New York	Northport, L. I.	July 2, noon	Laying 1,400 ft. 8-in. storm sewer, paving, etc. Main St.	Frank Asbury, C.E., Hunt'g'd'n, L. I.
Minnesota	Winnebago	July 2, 8 P.M.	Laying 3,300 ft. 8-in. sewers; also 10 san. sewers.	J. K. Sherin, City Clerk.
New Jersey	Avalon	July 2	Constructing portion of sewer system; cost, \$8,000.	R. L. Goff, Ocean City, Eng'r.
Ohio	Springfield	July 3, noon	Constructing sanitary sewer in Plum St.	Wm. H. Mahoney, Clk. Bd. Pub. Ser.
Ohio	Wadsworth	July 6, noon	Constructing sewage disposal plant.	Louis F. Allen, Village Clerk.
North Dakota	Ellendale	July 6, noon	Bldg. septic tank at outlet of sewer system.	John King, City Auditor.
Ohio	Cortlett	July 6, noon	Constructing sewers in streets.	Courtney Eng. Co., Am. Tr. bldg. Clv.
Nebraska	Omaha	July 6, 2 P.M.	Bldg. 5,220 ft., 10, 11, 12 ft., 16x7½ ft., 42 and 30-in. brick or rein. concrete sewer, Izard St.; also 3,637 ft., 4 to 8 ft. Jones St.	Andrew Rosewater, City Eng'r.
Pennsylvania	Bentleyville	July 6, 4 P.M.	Constructing sewers, 900 ft., 12-in.; 300 ft. 8-in pipe, etc.	C. C. Hanlon, Boro Engineer.
California	Alameda	July 6, 8 P.M.	Constructing several sewers.	W. R. Poyer, City Engineer.
California	Eureka	July 6, 8 P.M.	Bldg. 8-in. vit. ironstone sewer with 96 4-in. y's in Mound St.	F. E. Browning, Clerk of Council.
New Jersey	Plainfield	July 6, 8 P.M.	Bldg. sanitary sewers, inc. 710 ft. 8-in. vit. pipe, 6-8 ft. deep; 36 ft. 8-in. c. i. pipe 100 ft. 4-in. vit. house con.; 34 branches, etc.	Andrew J. Gavett, City Surveyor.
Pennsylvania	Jeannette	July 6, 8 P.M.	Constructing 1,850 ft. of sewer.	Borough Secretary.
North Dakota	Valley City	July 6, 8 P.M.	Constructing 10-in. sewer on Elizabeth St.	H. F. Halverson, City Auditor.
Wisconsin	Hudson	July 6, 8 P.M.	Constructing sewer in Fourth St.	A. Karras, City Clerk.
Minnesota	Hallowell	July 6	Constructing sewer extensions.	J. E. Carroll, C. E., Crookston.
New York	Newark	July 7, 10 A.M.	Bldg. sewage disposal plant at N. Y. State Custodial Asyl.	Benj. A. Chase, Secy. Bd. Mgrs.
Ohio	Cleveland Hg'ts.	July 7, noon	Bldg. sewer and Grading Compton and Highland roads.	F. A. Tease Eng. Co. Wmnsn. bld. Clv.
Connecticut	Thompsonville	July 7, noon	Bldg. 3,500 ft. vit. granite pipe sewer, 2 flush tanks, etc.	Secretary of Sewer Board.
Indiana	Shelbyville	July 7, 6 P.M.	Plans, spec., est., etc., sanitary and storm sys. and disp. plant.	J. H. Phillipi, City Engineer.
Wisconsin	So. Milwaukee	July 7, 8 P.M.	Engr's services for sewerage and water works exten.	Health and Sewer Committee.
New Jersey	Bayonne	July 7, 8 P.M.	Bldg. sewer in 42d St.; receiving basin, 44th St. and Bwy.	W. C. Hamilton, City Clerk.
Ohio	Youngstown	July 7	Constructing 4 sewers.	Board of Public Service.
Missouri	Boonville	July 8, 8 P.M.	Constructing sewer in Sewer Dist. No. 23.	Chas. G. Miller, City Clerk.
Nebraska	David City	July 8, 8 P.M.	Installing sewer system; M. A. Earl & Co., Chicago, Ill., Eng'rs.	W. S. McCoy, City Clerk.
Ohio	Columbus	July 8	Constructing sewer in Poplar Ave., from Kerr to 4th St.	E. W. Hirsch, Sec'y Bd. Pub. Serv.
Alabama	Andalusia	July 10, noon	Constructing sewer system.	Z. D. Stredstill, City Clerk.
Alabama	Mobile	July 13, noon	Furn. and laying 250 ft. 2½ x 3 ft. rein. concrete culvert; 10,600 ft., 10 to 36-in. pipe sewers; 15,000 ft., 6-in. house connections, catch basins, manholes, inlets, etc.	Stewart Brooks, Pres. Bd. Pub. Wks.
Indiana	Wabash	July 13, 6 P.M.	Constructing storm water sewer system.	Fremont McLees, City Clerk.
Ohio	New Bremen	July 13	Sewering Franklin St.	F. W. Schoeder, Village Clerk.
Indiana	South Peru	July 14, 7:30 P.M.	Bldg. 8½ ft. reinforced concrete sewer, 1,578 ft. long.	Geo. F. Merley, Town Clerk.
Kentucky	Louisville	July 17, noon	Constructing Section B of new sewer system.	J. B. F. Breed, Ch. Eng'r. Sewer Com'n.
Ohio	New Bremen	July 18, noon	Constructing sewer in Franklin St.; 1,664 ft. 8-15-in.	F. W. Shraeder, City Clerk.
North Carolina	Shelby	July 22	Constructing sewer and waterworks.	J. F. Riddy, City Clerk.
New York	Syracuse	July 23, 4 P.M.	Imp. Onondaga Crk., 2½ miles long, inc. 76,000 cu. yds. excavation and 14,800 cu. yds. concrete blocks and mass concrete.	Henry J. Hamlin, Secy. Sewer Bd.
Ohio	Cleveland	July 23	Constructing 8½ ft. sewer; cost, \$60,000.	A. J. Callow, Secy. Bd. Pub. Serv.
Kansas	Pratt	July 24, noon	Constructing sewerage system.	City Clerk.
Virginia	Portsmouth	July 28, 8 P.M.	Constructing sanitary sewer system for Fifth Ward.	Bascan Sykes, City Engineer.

## Public Buildings

Iowa	Denver	July 2, 9 A.M.	Bldg. school, also heat. and plumb.; J. G. Ralston, Waterloo, Arch.	E. Gunther, Secy. School Bd.
Wisconsin	Milwaukee	July 2, 10:30 A.M.	Plans, etc., for branch police station; cost, \$25,000.	C. J. Poetsch, Cl. m. Bd. Pub. Wks.
Dist. of Col'b'a	Washington	July 2, 2 P.M.	Erecting assembly hall, Govt. Hosp. for Insane.	Frank Pierce, Act. Secy. Int. Dept.
Tennessee	Columbia	July 2, 3 P.M.	Constructing, complete, U. S. Post Office.	James Knox Taylor, Wash., D. C.
Indiana	Crown Point	July 2	Erecting new high school bldg.	J. F. Meeker.
Indiana	Portage	July 2	Erecting modern brick school.	B. T. Spencer, Trus. Tp. Bd.
Indiana	Needmore	July 3, 2:30 P.M.	Bldg. two 3-room brick-veneered schools, Jackson tp.	Ira F. Poling, Trus. Jackson tp.
California	San Jose	July 6, 11 A.M.	Constructing a Hall of Justice.	Ray Walter, City Clerk.
Ohio	Delaware	July 6, noon	Bldg. 2-story and base. school in sub-dist. No. 2 St. Albans tp.	T. F. Dye, Sec'y Bd. Trustees.
Ohio	Alexandria	July 6, noon	Building steel and concrete floor, portion of Old Post Office.	H. C. Eger, Pres. Bd. Educ. of tp.
Dist. of Col'b'a	Washington	July 6, 2 P.M.	Constructing, complete, U. S. Post Office.	F. Pierce, Act. Secy. Interior Dept.
Georgia	Marietta	July 6, 3 P.M.	Constructing \$40,000 County jail.	James Knox Taylor, Wash., D. C.
Ohio	Hattiesburg	July 6	One-story addition to library bldg; cost \$20,000.	W. H. Hull, Jackson, Arch.
New York	Mt. Vernon	July 6	Erecting municipal building.	E. L. Tilton, N. Y. City, Arch.
Pennsylvania	Boswell	July 7, noon	Erecting 2-story County infirmary building.	E. B. Mauer, Boro Secretary.
Ohio	Marietta	July 7, noon	Constructing, complete, U. S. Post Office.	J. M. Williams, County Auditor.
Kansas	Iola	July 7, 3 P.M.	Erecting \$15,000 school building.	James Knox Taylor, Wash., D. C.
Georgia	Douglasville	July 7	Erecting the Mayor.	The Mayor.


## Public Buildings—Continued

Indiana.....	Washington.....	July 7.....	Repairs to County Court House.....	Thomas Nugart, County Auditor.
Illinois.....	Aledo.....	July 7.....	Erecting County jail and sheriff's residence.....	Fred Hendrickson, Clk. Mercer Co.
Mississippi.....	Charleston.....	July 7.....	Comp. plans for 6-class room and school; \$20,000.	J. W. Saunders, Mayor.
Pennsylvania.....	Norristown.....	July 8, 10 A.M.....	Alterations to County prison.....	Robt. Miller, Clk. Co. Com'r's.
Georgia.....	Brunswick.....	July 8.....	Prelim. plans, etc., for \$30,000 high school, complete.	N. H. Ballard, Sec'y Bd. Educ.
Ohio.....	Springfield.....	July 9, 3 P.M.....	Constructing extension to U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Wisconsin.....	Rhinelander.....	July 10, 2 P.M.....	Constructing 3-story Court House; cost, \$100,000; stone, fire-proof construction, 120x95 ft. A. Taylor Chm. Co. Com'r's.	C. H. Tegen, Manitowoc, Arch.
Illinois.....	Chicago.....	July 14, 11 A.M.....	Wrecking, exc. and caissons for new City Hall.....	Holabird & Roche, Monadn. Blk. Architects.
Maryland.....	Dorsey.....	July 14, noon.....	Erecting new school for Anne Arundel County.....	Howard Shipley, Architect.
Ohio.....	Hamilton.....	July 14, noon.....	Bldg. brick school at Lindenwald; Fred G. Mueller, Arch.	John A. Keller, Clk. Bd. Educ.
Pennsylvania.....	Sharon.....	July 14, 3 P.M.....	Constructing, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Georgia.....	Valdosta.....	July 15, 3 P.M.....	Constructing, complete, Federal Building.....	James Knox Taylor, Wash., D. C.
Iowa.....	Des Moines.....	July 15.....	Erecting school in Elm Grove Dist., Bloomfield tp.	Hallett Ranson, Utica Bldg. Arch.
Maine.....	Augusta.....	July 16, 3 P.M.....	Bldg. complete extension to Post Office.....	James Knox Taylor, Wash., D. C.
Ohio.....	Lisbon.....	July 17.....	Remodeling and improving the County infirmary.....	County Commissioners.
Ohio.....	Wyoming.....	July 18, noon.....	Erecting Fire Dept. bldg.; Garber & Woodward, Cinc., Arch.	Josiah Kirby, Mayor.
Ohio.....	Jefferson.....	July 20, 1 P.M.....	Bldg. 2-story and base brick addition to Court House.....	J. L. Wilson, Ashtabula, Arch.
Maine.....	Auburn.....	July 20, 3 P.M.....	Constructing, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Michigan.....	Coldwater.....	July 21, 3 P.M.....	Constructing, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Tennessee.....	Paris.....	July 22, 3 P.M.....	Constructing, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Illinois.....	Alton.....	July 23, 3 P.M.....	Constructing, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Illinois.....	Belleville.....	July 24, 3 P.M.....	Constructing, complete, U. S. Post Office.....	James Knox Taylor, Wash., D. C.
Maine.....	Portland.....	July 30, 3 P.M.....	Constructing, complete, U. S. Court House.....	James Knox Taylor, Wash., D. C.
Texas.....	Houston.....	August 1.....	Bldg. \$500,000 Court House, Lang & Witchell, Dallas, Archs.	Harris County Commissioners.
Minnesota.....	St. Paul.....	August 1.....	Competitive plans for Mechanical Arts High School, 62 rooms; Architects all over country invite to submit plans.	
Kansas.....	Atchison.....	August 3, noon.....	Bldg. ad. to Co. Hosp. on Co. farm; lining jail with rein. conc.	Com. on Schools, School Bd.
Wisconsin.....	Green Bay.....	September 23, noon.....	Erecting Court House; sep. bids for plumbing, heat, etc.....	Edward Iverson, County Clerk.
C. E. Bell, N.W.bldg., Minpls., Minn.				

## Bridges

South Carolina.....	Spartanburg.....	July 2.....	Bldg. steel bridge; 68 ft. span, 34 ft. approach, repair. piers.....	W. Frank West, Co. Supervisor.
Indiana.....	Indianapolis.....	July 3, 10 A.M.....	Constructing bridges in several townships.....	Albert Sahm, County Auditor.
Ohio.....	Cincinnati.....	July 3, noon.....	Bldg. new abutment and replacing bridge and ap. Fowlers Cros.	Stanley Struble, Pres. Co. Com'r.
Pennsylvania.....	Easton.....	July 3.....	Repairing bridges for County Commissioners.....	L. A. Francisco, County Eng'r.
Connecticut.....	Hartford.....	July 6, 11 A.M.....	Repair to Boulevard bridge over Park River.....	James P. Berry, Secy. Bd. C. and S.
Indiana.....	Keatland.....	July 6, 1 P.M.....	Bldg. 2 steel bridges, 3 concrete abutments, etc., furn. 10,000 ft. oak bridge lumber, 2 $\frac{1}{2}$ in. to 14 to 16 ft. long.....	A. E. Purkey, County Auditor.
Indiana.....	Rochester.....	July 6, 2 P.M.....	Bldg. concrete arch over ditch in Wayne township.....	Geo. W. Du Bois, County Auditor.
Indiana.....	La Porte.....	July 6.....	Bldg. double span, 282 ft. bridge with concrete abutments.....	County Commissioners.
Indiana.....	Delphi.....	July 6.....	Bldg. 50-ft. span bridge, grading, etc., cost, \$9,500.....	W. H. Bradshaw, City Engineer.
Wisconsin.....	Milwaukee.....	July 6.....	Bldg. concrete-steel viaduct of two 100 ft. arches and app.....	Charles J. Poetsch, City Engineer.
Mississippi.....	Greenwood.....	July 6.....	Bldg. bridge over Tippo Riv. and 80 ft. one over Goose Pond Slough; also 3 bench bridges in county.....	C. W. Crockett, Clk. Co. Com'r's.
Virginia.....	Max Meadows.....	July 6.....	Bldg. iron bridge 150 ft. long, 16 or 18 ft. wd. over Reed Crk.....	J. H. McGavock, Chm. Bd. Co. Sup.
Indiana.....	Jasper.....	July 7, 10:30 A.M.....	Bldg. 4 iron bridges in Cass Col'bria and Harrison tps.....	M. A. Sweeney, County Auditor.
Mississippi.....	Vicksburg.....	July 7, noon.....	Flooring Ragan Lake and Baldwin's Ferry bridges.....	J. D. Laughlin, Chancery Clk.
California.....	Yreka.....	July 7, noon.....	Bldg. 220 ft. span steel bridge over Klamath River near Scott Bar; also 100 ft. steel span at Sawyers Bar.....	W. J. Neilon, County Clerk.
Indiana.....	Emerson.....	July 7, 2 P.M.....	Constructing bridge at Emerson.....	John T. Scott, Knox County, Auditor.
Missouri.....	Oregon.....	July 7, 8 P.M.....	Bldg. two 18-ft. span bridges; three 22 ft., two 36 ft., 26 and 51 ft. spans.....	Wm. M. Morris, County Eng'r.
South Carolina.....	Walhalla.....	July 7.....	Bldg. iron bridge over Little River at Morgan bridge site.....	A. D. McClain, C. E., Spartanburg.
Missouri.....	Carrollton.....	July 7.....	Constructing concrete bridge.....	C. H. Faris, County Hwy. Eng'r.
California.....	Eureka.....	July 8, 10 A.M.....	Bldg. steel hwy. bridge over S. Fork at Garberville, inc. main span 266 ft. long, 247 ft. south and 38 ft. north app.; 16 ft. wide.....	
Indiana.....	Rochester.....	July 8, noon.....	Bldg. steel bridge, 171 ft. span, 16 ft. rdwy., 2 conc. abutments.....	Geo. W. Cousins, County Clerk.
Ohio.....	Coshocton.....	July 8.....	Bldg. sub. and super., 144 ft. span over Wills Crk., Linton tp. and 50 ft. swing bridge over canal, Jackson tp.....	County Commissioners.
Indiana.....	Anderson.....	July 9, 11 A.M.....	Constructing several bridges.....	Geo. J. Bock, County Surveyor.
Indiana.....	Elkhart.....	July 9, 2:30 P.M.....	New floor and repairs to N. Main St. bridge.....	W. T. Richards, County Auditor.
Oklahoma.....	Durant.....	July 9.....	Bldg. suspension bridge over Island bayou, near city.....	D. O. Batchelor, County Auditor.
Indiana.....	Connersville.....	July 10, 10 A.M.....	Bldg. 45-ft. concrete arch bridge with 45-ft. rdwy. over White Water River, and constructing fills.....	J. M. Abbott, Chm. Co. Com'r's.
Ohio.....	Lorain.....	July 10, 1 P.M.....	Bldg. concrete arch bridge of two 75-ft. spans, 18-ft. rdwy.....	J. L. Kennedy, County Auditor.
Ohio.....	Middletown.....	July 14, 10 A.M.....	Bldg. hoist bridge over M. and E. Canal; also floors and walks.....	James Bebout, County Auditor.
Idaho.....	Lewiston.....	July 14, 10 A.M.....	Constructing bridge over Lawyer's Canyon.....	J. E. Brate, Co. Aud., Hamilton.
North Dakota.....	Fargo.....	July 14, noon.....	Constructing and repair of eleven county bridges.....	W. L. Gifford, Clk. Co. Com'r's.
Wyoming.....	Lander.....	July 14, 8 P.M.....	Bldg. concrete arch at Main St.; also 2 concrete culverts.....	Arthur G. Lewis, County Auditor.
Ohio.....	Dayton.....	July 18, noon.....	Bldg. concrete-steel bridge over Gt. Miami River.....	J. C. Edsall, Town Engineer.
New Brunswick.....	Frederickton.....	July 20.....	Bldg. 3 metal super. spans, hwy. br., from revised work.....	F. J. Cellarius, City Engineer.
John Morrissey, Chm. Dept. Pb. Wks.				

## Lighting and Electricity

Illinois.....	Chicago.....	July 2, 11 A.M.....	Furn. electric light and fire alarm cables, large am'ts.....	W. M. Carroll, City Electrician.
New York.....	White Plains.....	July 3.....	Elect. equipment car, power plant, fixtures, etc., 2 bldgs.....	C. T. Secor, Chm. Co. C. H. Bd.
North Dakota.....	Valley City.....	July 6, 8 P.M.....	Sale of city's electric light plant, \$40,000 or over; exclusive 20-year franchise to successful bidder.....	H. F. Halverson, City Auditor.
Wisconsin.....	Sturgeon Bay.....	July 7, 8 P.M.....	Constructing electric light plant and water works system; also for old machinery now in city electric light plant.....	H. C. Leonhardt, City Clerk.
Michigan.....	Detroit.....	July 8, 4 P.M.....	Install. elec. gen. plant in pub. light station.....	F. T. Bowler, Secy. Pub. Light Com.
Wisconsin.....	Kewaunee.....	July 8, 8 P.M.....	Constructing an electric light plant, Oscar Clausen, St. P., C.E.	O. H. Brumner, Mayor.
Illinois.....	North Chicago.....	July 15, noon.....	Heat. and elec. distr. mains and concrete tunnel, Train.Sta.....	Commandant, Naval Train Station.
Michigan.....	Traverse City.....	July 15, 2 P.M.....	Raising Upper Dam fr. 22 to 41 ft. head; Bd. Min. Riv. L.P.C.O.	W. S. Cook, Gen. Mgr.
Dist. of Col'bria.....	Washington.....	July 15.....	Furn. 20 miles, type 44, interm. single-conductor cable, spec. 419; 30 miles, type 45, deep sea cable, sing.-cond., spec. 420; 5 miles, type 46, light double armor, single conductor cable, spec. 421.....	
Ontario.....	Toronto.....	July 15.....	Bldg. steel trans. towers, line cable and system from Niagara Falls to Toronto and St. Thomas for Hydro-Elec. Power Com.	Chief Signal Officer, U. S. Army
Alberta.....	Medicine Hat.....	July 18.....	Drilling a6 and 8-in. gas well.....	Adam Beck, Chm. Hy-Elec. Pow. Co.
Kentucky.....	Richmond.....	July 20.....	Bldg. steam, light and heat plant Ky. East Norm. Sch; \$25,000.	W. B. Morrison, City Engineer.
Pennsylvania.....	Wilkes-Barre.....	July 23, noon.....	Lighting certain sts. with electric arc lights for 3, 5 and 7-yr. terms, from July 1, 1909; \$5,000 check with bid.....	Anderson & Frankel, Lexington, Eng.
Montana.....	Townsend.....	August 1.....	Bldg. 600 h.p. electric plant on Deep Creek for lighting city and operating mines; cost, \$85,000.....	R. H. Richards, Chm. St. Ltg. Com.
Pennsylvania.....	Pottstown.....	August 1.....	Lighting sts. by gas or electricity, 3 or 5 yrs.; now using 56 incan. lights, 32 cp. each; 80 arc lights, 1,200 cp. each.....	C. Hebrinch, Helena, Eng'r.
Wisconsin.....	Green Bay.....	September 23.....	Gas and electric fixtures, etc., new Co. Court House.....	C. H. Breidenbach, Chm. Prop. Com.
Elmer S. Hall, Clk., Brown Co.				

## Miscellaneous

Delaware.....	Wilmington.....	July 2, 10:30 A.M.....	Bldg. rein. concrete retaining wall, 276 ft. long along Brandywine Crk.; also for other material with plans, etc.	Edward R. Mack, Park Eng'r.
West Virginia.....	Saltpetre.....	July 2, 2 P.M.....	Building dam at lock No. 1, Tug Fork, Big Sandy River.....	Col. J. G. Warren, U. S. Eng'r. Cincinnati.
Pennsylvania.....	Rankin.....	July 2, 2 P.M.....	Bldg. ro-ton garbage crematory.....	C. Koelman, Boro Sec'y.
Nebraska.....	Morse Bluff.....	July 2.....	Furnishing hose cart and fire hose.....	Frank Katlan, Chm. Village Bd.
Dist. of Col'bria.....	Washington.....	July 6, 2 P.M.....	Tearing down and removing old Penns. ry station.....	Col. C. S. Bromwelt, U. S. Eng'r's.
Massachusetts.....	Boston.....	July 6, 2:30 P.M.....	Furn. and install. piping at lock in Charles River dam.....	Charles River Basin Com'n.
Minnesota.....	Owatonna.....	July 7.....	Furn. com. chemical and hose wagon.....	City Clerk.
Manitoba.....	Winnipeg.....	July 8.....	Constructing movable dam, steel service and highway bridge, repair shop, etc., at St. Andrews Rapids, Red River.....	Fred. Gelinas, Ottawa, Ont., D. P. W.
Indiana.....	Connersville.....	July 10.....	Filling in. White Water bridge, \$15,000, inc. 34,250 yds. earth fill.; 2,733 yds. gravel, 9,840 sq. ft., sodding.....	A. L. Steuart, Rushville, Eng'r.

## STREET IMPROVEMENTS

**Berkeley, Cal.**—The Town Board of Trustees has resolved to macadamize the roadway of Derby street, from the western line of Grove street to the eastern line of Grant street.

**Los Angeles, Cal.**—A \$3,000,000 bond issue is proposed for good roads in this city and vicinity.

**San Diego, Cal.**—Council has adopted a resolution for the paving with asphalt of H street, from Fourth street to Atlantic street.

**San Mateo, Cal.**—The City Trustees have decided to pave Prospect Row, Villa Terrace and Highland avenue; they are also considering plans for paving of Bellevue Grand boulevard with asphalt.

**Bloomington, Ill.**—At recent meeting of the Board of Local Improvements, estimates were submitted for the proposed paving of East Clay street, between Gridley and State streets.

**Cairo, Ill.**—Wilbur B. Thistlewood, City Engineer, has completed plans and specifications for additional 8-inch to 30-inch pipe sewers on various streets.

Construction of 48-inch to 72-inch concrete main sewers will be resumed by the Rich Construction Company of St. Louis shortly; this work has been shut down due to high water prevailing in the Ohio River.—Wilbur B. Thistlewood, City Engineer.

**Chicago, Ill.**—A new boulevard 130 feet wide is to be constructed on the east side of Michigan avenue, between Randolph and River streets, and will form final link, proposed recently by Mayor Busse.

**Canton, Ill.**—The Highway Commissioners have decided to pave South Main street out from the corporate limits to the Chautauqua grounds.

**East St. Louis, Ill.**—The Terminal Railway Company and other railroads will be compelled to pave Missouri avenue, from the Relay depot to the levee, a distance of about a mile.

**Oak Park, Ill.**—Bids will be received at once by the Board of Local Improvements for construction of concrete sidewalks on a number of streets.—E. C. Brandstadt, Secretary of Board.

**Peoria, Ill.**—Council has passed an ordinance for the paving of a portion of South Glendale avenue, from the extended south line of Main street to the northeast line of Monson street, with brick paving.

**Rockford, Ill.**—The Board of Local Improvements, James T. Joslin, Secretary, S. B. Hand, City Engineer, has ordered the repaving of State and Main streets, about 6,500 feet, at once; asphalt or brick will be used.

**Alexandria, Ind.**—Fifteen road improvement petitions have been filed from Monroe township, and it is expected that they will be passed favorably by the Commissioners; the cost will run into thousands.

**Indianapolis, Ind.**—Property is now being purchased for the proposed boulevard along the bank of Fall Creek, from Northwestern to Capitol avenues.

**Logansport, Ind.**—Council is arranging to pave certain portions of Broadway.—Address J. T. McNary.

**New Albany, Ind.**—The Board of Public Works has approved of plans for a proposed granitoid pavement to be laid on Eleventh street, and a resolution providing for the improvement will be prepared at once.

**Mason City, Ia.**—Council will let contracts for eight blocks of concrete block paving and fourteen blocks of brick paving.

**Wichita, Kan.**—Council is arranging to pave a large number of alleys.

**Baltimore, Md.**—Road Engineer W. W. Crosby will soon begin survey of the routes of the highways to be improved under the \$5,000,000 State loan.

**Rockville, Md.**—The taxpayers of Potomac district, this county, at a special election decided by a vote of 87 to 18 in favor of an issue of \$20,000 bonds for the construction of a pike from Potomac to the Conduit road, a distance of nearly five miles. Under the law the County Commissioners have no alternative but to carry out the wishes of the taxpayers, and the work of construction will be started just as soon as the preliminaries can be completed.

**Beverly, Mass.**—The Board of Aldermen has adopted an order appropriating \$1,000 for macadamizing Central street.

**Hanover, Mass.**—Preliminary work has been commenced for new State highway; nearly \$5,000 has been appropriated by this town.

**Lowell, Mass.**—Superintendent Charles Morse of the Street Department will pave Westford street.

**Detroit, Mich.**—Council directed the Department of Public Works to advertise for proposals for paving Bewick avenue, from Jefferson to Kercheval avenue, 26 feet wide, with cedar blocks, on concrete foundation, with Medina, Berea, or other suitable curbing; estimated cost, \$7,673; the Department

was also directed to advertise for proposals for paving three alleys with vitrified brick on concrete foundation.—J. J. Haarer, Commissioner.

**Dowagiac, Mich.**—Council is considering paving of Green street, South Front, High street and Michigan avenue.

**Ithaca, Mich.**—Engineers Riggs & Sherman, Nasby Building, Toledo, O., are preparing plans for about one and a quarter miles of brick pavement in this city; bids will be received early in July.

**Laurium, Mich.**—A portion of Hecla street is to be paved this summer.

**Coleraine, Minn.**—Plans are under way for paving a number of streets in this town.

**Minneapolis, Minn.**—Bids are being received by the Board of County Commissioners for road work in this city.—Hugh R. Scott, County Auditor.

**Kansas City, Mo.**—R. L. Gregory, President of the Board of Public Works, can be addressed for further information regarding improvements planned to roads and highways here.

County Engineer Oscar Koehler is preparing plans for four miles of macadam road in Jackson County; cost, \$18,000.

**Lexington, Mo.**—City Engineer Joseph A. Wilson is preparing plans for vitrified brick paving on concrete foundation on Franklin street.—J. Fager, City Clerk.

**Maryville, Mo.**—The city contemplates half a mile of brick paving; bids will be received at once by M. A. Peery, City Clerk.

**St. Joseph, Mo.**—The Board of Public Works has decided to pave Sixteenth street, from Mitchell avenue to Sacramento street, with brick; an ordinance has also been recommended to Council providing for the paving of the alley between Fifth and Sixth streets, from Messanie to Locust street, with brick.

**St. Louis, Mo.**—A. J. O'Reilly, President Board of Public Improvements, has had plans prepared for granite sidewalks for the City Hospital.

**Bozeman, Mont.**—Council has decided to pave Main street with granitoid concrete blocks; an ordinance will be prepared at once; a meeting of the Gallatin Club was recently held to take up the plan of having North Wallace avenue macadamized.

**University, Mo.**—Consulting Engineer Colby, Security Building, St. Louis, is preparing plans for bituminous pavement for streets.—E. G. Lewis, Mayor.

**Paterson, N. J.**—Council has passed an ordinance to grade, curb and gutter two streets, curb and gutter nine streets and grade three streets.—Joseph McCrystal, President, Board of Public Works.

**Plainfield, N. J.**—Bids are asked for new road, from Green Brook to South avenue.—F. J. Hubbard, County Engineer.

**Brooklyn, N. Y.**—The Board of Estimate has made an appropriation of \$350,000 each for the Bronx and Queens repaving, and \$300,000 for the repaving in Richmond Borough.

**Buffalo, N. Y.**—C. M. Morse, City Engineer, has been directed to prepare plans for paving Elmwood avenue, from Forest avenue to north approach of bridge over Scajaquada Creek; bids will be called for by Frank G. Ward, Commissioner of Public Works.

**Horn, N. Y.**—The Board of Trade has appointed a Special Committee to take up the matter of securing pavement for the principal business streets in the town.

**Jamestown, N. Y.**—The city is to expend \$100,000 on street paving, and work will shortly be started, including Barrett avenue, Newland avenue, Charles street and McKinley avenue.

**Niagara Falls, N. Y.**—The matter of paving Cleveland avenue is still under consideration; it has not been decided whether to use asphalt or brick pavement.

**Ossining, N. Y.**—The Board of Village Trustees will take immediate steps towards carrying out the work of paving the uncompleted portion of the Secor road.

**Rochester, N. Y.**—The City Engineer has been directed to prepare plans for improving sundry streets; bids will later be called for by the Board of Contract and Supply.

**Ada, O.**—Bids will be received by E. J. Carey, Village Clerk, for 8,500 square yards of brick paving.—Thomas Smull, Engineer.

**Ashtabula, O.**—Council has authorized L. A. Amsden, City Engineer, to prepare plans and specifications for grading Perryville avenue, from Nathan to Samuel street.

**Cleveland, O.**—Council has adopted a resolution to repave St. Clair avenue, from East Ninth street to East Forty-ninth street.

**Coshocton, O.**—Contracts will soon be awarded for two miles of road; Geo. J. Bock, Jr., District Road Engineer.

**Dayton, O.**—Council has passed ordinances to pave, curb and gutter Mad River street and Great Miami boulevard and to re-establish the grade of Dutoit street.—Edward E. Burkhardt, Mayor.

**East Liverpool, O.**—Council will pass the necessary legislation for paving Hale street.

**Lockland, O.**—Council has decided to proceed at once with the work of macadamizing and curbing Wayne, Stewart and Cooper avenues. Bids will be received for constructing artificial stone or cement sidewalks on Harriet street.

**Portsmouth, O.**—Bids will be received by the Board of Trustees of the Children's Home of Scioto County for the construction of a sidewalk on the north side of Grant street and along the south of the Home.

**Steubenville, O.**—There will be no paving of any streets in the city until September, according to the statement of City Engineer Leech; he has stated that at the present time there are so many improvements being made in the city that it would be impossible to take up the paving of streets until the work now on hand is completed; several streets are to be improved by new pavements this year, including South Third street.

**Wauseon, O.**—The county will improve Oak street by paving as soon as the plans can be prepared.

**Youngstown, O.**—The special committee of Council appointed to investigate the proposition to straighten Ridge avenue and build an approach from that street directly to the Market street viaduct, doing away with the present treacherous turn at the south approach of the bridge, has decided to have the City Engineer and City Solicitor prepare plans and legislation for the proposed improvement; the matter of an approach directly onto the bridge has not been decided, but the committee will recommend that the street be straightened and graded at the east end, which is at present in a dangerous condition.

**Chancellor, Okla.**—Since it has been decided to pave Manvel avenue, the matter of a sanitary sewer system for that thoroughfare is being considered.

**El Reno, Okla.**—The question of building roads through the town is now being discussed.—Address Mayor.

**Eugene, Ore.**—Council has passed an ordinance providing for the paving of all park streets in the city.

**Altoona, Pa.**—The voters of Altoona will be given an opportunity, probably at the fall election, to vote for a loan for \$125,000, the money to be used for street paving and to pay for the city's share of the cost of constructing a new bridge over the railroad yard at Seventh street, provided an ordinance introduced in Common Council by Mr. Rogers, of the First Ward, is passed.

**Bradford, Pa.**—An item of \$7,000 is included in bonding resolution passed by Council for repaving Webster street; a retaining wall will be built in High street.

The Street Committee has reported favorably on an amendment to the ordinance providing for the widths and grades of sidewalks on High street.

**Chester, Pa.**—At a recent special election the question of issuing \$15,000 bonds for improving the Lazaretto road was decided on.

**Dunmore, Pa.**—The Borough Engineer has been instructed to make plans and specifications for paving of Blakely street, from the city line to Warren street.

**East Washington, Pa.**—East Washington Borough will issue bonds to the amount of \$11,000, to be used for the additional improvement and paving of streets and alleys of the borough.

**Erie, Pa.**—Council has passed a resolution asking for new bids for the paving of West Fifth street.

The Joint Street Committee has recommended the following ordinances for passage: Paving Cascade, Fourth to Eighth, establishing width of walks on Eleventh street, State to Parade; sewer in Tenth street, Pennsylvania avenue east 1,100 feet; curbing Myrtle street, Front to Fourth, Sassafras, Second to Front, and Short, Sassafras to Chestnut; paving Second, State to Sassafras; establishing grade of Fifth street, Poplar to Liberty; re-enacting ordinance for paving Eighteenth street, Liberty to Cranberry; curbing Twenty-third, Peach to Chestnut, and Scott, Myrtle to Twenty-ninth; paving Twentieth, Peach to Chestnut; sewer in Warfel avenue, Buffalo road south; curbing Twenty-ninth, Peach to Chestnut, and Cochran, Twenty-sixth to Thirtieth; Paving Chestnut, Eighteenth to Twenty-first; sewer in Twenty-ninth street, Cochran west 270 feet; sewer in Twenty-first, Warfel avenue east 650 feet; paving Chestnut, Seventeenth to Huron, Hickory, Eighteenth to Sixteenth, Sixteenth, Chestnut to Cherry, Walnut, Eighteenth, to Huron, and Cherry, Eighteenth to Sixteenth, Huron, Chestnut to Cherry; paving Eighth street, Parade to East avenue; paving Reed, Ninth to Twelfth; Wayne, Eighth to Twelfth; Wayne, Twelfth to Lake Shore tracks; paving Wallace, Fifth to Eighth.

**Franklin, Pa.**—The Borough Council has passed ordinance for paving with vitrified block, curbing with stone, laying brick, flagstone or concrete sidewalks and grading por-

tions of River and Spruce streets, \$12,000 bonds being issued for the purpose.—Thomas Trimbath, Burgess; J. H. Detweiler, Secretary.

**McKeesport, Pa.**—The Grand Jury at Pittsburgh has approved the building of 54.15 miles of country roads at an estimated cost of about \$975,000. The thoroughfares are well distributed and many of them are important connecting links in the chain of highways now constructed. Two are in this district, Charles B. Price, President of the Board of County Commissioners, hopes to have work started on all of the roads this year, but it will be impossible to complete the entire fifty-four miles before Winter sets in; bids will be advertised at once for all of the roads. The two for this district are: Miller's Grove and Clairton road, through Baldwin and Jefferson townships 8.6 miles, estimated cost, \$138,000; Portvue and Lovedale road, from Portvue through Lincoln township to junction with Lovedale road on Wyllie's run. This is an important link between the southeastern system of roads and McKeesport, three miles; estimated cost, \$55,308.30.

**Monaca, Pa.**—The Borough Council has been presented with a petition for the paving of Atlantic avenue, between Ninth and Tenth avenues.

**Monessen, Pa.**—The Borough Council will probably pass on July 15 ordinances for grading, curbing and paving with block, brick or stone Oneida street, 210 feet long; Donner avenue, 210 feet, and Second street, 265 feet.—F. H. Shutterly, Chief Burgess; J. E. Pittman, Clerk.

**Pittsburg, Pa.**—Before being discharged by Judge Josiah Cohen, the June Grand Jury approved plans of the County Commissioners for the repair of 56.16 miles of county roads at a cost of \$974,089.08. Road repairs approved are as follows:

Broughton and Library connecting road, Snowden and Bethel townships, 2.4 miles, \$41,690.44; Miller's Grove and Clairton road, Baldwin and Jefferson townships, 8.6 miles, \$138,000; Little Pine Creek extension No. 2, Indiana township, 2.6 miles, \$47,416; Broughton and Cochran Mills road, Snowden and Jefferson townships, 2.9 miles, \$56,491.10; Freeport road, Harrison township, 2.5 miles, \$40,104.80; Dorsevillle and Culmerville road, Indiana and West Deer townships, 6.5 miles, \$118,729; Three Degree road, McCandless and Pine townships, 7.25 miles, \$121,241; Wind Gap road, Chartiers township, 1.4 miles, \$23,185.95; McCoy road, Stowe and Kennedy townships, 2.25 miles, \$38,922.50; Saltsburg extension, Plum township, 3.35 miles, \$62,880.45; Elliott and Crafton connecting road, Chartiers township, .9 mile, brick, \$31,945.50, macadam \$15,775.50; Portvue and Lovedale road, Lincoln township, three miles, \$55,308.30; Pangburn Hollow road, Forward township, 1.8 miles, \$42,826.25; Munroeville and Pitcairn connecting road, 1.1 miles, \$20,082.50; Steubenville pike and Enlow road, North Fayette and Findley townships, 3.2 miles, \$54,409.50; Evergreen and Lowrie's run connecting road, one mile, Ross township, \$18,509.05; Munroeville and Trestle road, 3.4 miles, Patton and Plum townships, \$62,496.15.

A bridge over Plum Creek, Plum township, also was approved.

The property owners of the Ninth street district will have an ordinance introduced in Councils in the near future providing for the raising of Ninth street above flood level; the success of the raising of Seventh street has caused a movement for similar improvements along the entire Allegheny water front.

**Scranton, Pa.**—Seven pave measures have passed Common Council, making it possible to present them before court for the appointment of viewers, so that the work can be done this year. Two other pave measures had to go over because they had not received the required three weeks' advertising.

Bids for repaving of Wyoming avenue between Pine and Larch streets have been rejected and new bids will be advertised.

Select Council has passed an ordinance for the grading and paving of West Market street from the westerly curb of Church avenue to the westerly curb line of Brick avenue.

The bid of the McDonald Construction Company for the paving of Wyoming avenue, between Pine and Larch streets, which was the only one received, will be rejected by the Department of Public Works, as the figure given is above the estimate allowed for the work; the estimate is \$50,000, whereas, at the rate the McDonald Company gives, the cost would run a thousand dollars over this. The Barber Asphalt Company declined to bid on the pave because of the low figure of the estimate. The McDonald Company's bid was \$2.30 per square yard for the asphalt laying and 75 cents per linear foot for straight concrete curb metal guard and \$1.25 for circular concrete curbing with metal guard. Director Acker will readver metal the job, which is one of the largest of the batch now under way. The pave will extend for more than ten blocks, and when

completed Wyoming avenue will have a continuous asphalt from Lackawanna to Larch.

There were two bidders for the paving of Webster avenue, from Linden to Mulberry streets. The Barber company bid \$2.53 per square foot and the McDonald company \$2.39. The contract will be awarded to the latter company.

**Tyrone, Pa.**—Councils have authorized the purchase of 2,000 Clearfield brick for paving Washington avenue; the work is to be completed by September 1.

**Warrensville, Pa.**—At a recent meeting of the Good Roads Association the question of good roads in Lycoming County was discussed; Emerson Collins can be addressed.

**Williamsport, Pa.**—Council has passed ordinances for the paving of Campbell street and a portion of Hepburn street.

**El Paso, Tex.**—It is probable that work of paving Montanna street will shortly be started; the street will be graded first.

**Marlin, Tex.**—The question of good roads is being discussed.

**McKinney, Tex.**—The first paving in McKinney is to begin right away, the property owners along the west side of the square having agreed to pave in front of their property with vitrified brick, to the track of the Dallas-Sherman interurban, the interurban to pave a foot on each side of the track; Council has decided to have the dirt removed for the paving along the proposed route, to pave at the intersections and to have the grade established for the paving; as soon as the plans and specifications are drawn it is intended to let the contract for paving.

**San Antonio, Tex.**—Council will shortly advertise for bids for the paving of Houston street.

An order has been passed ordering the Superintendent of Roads to make immediate arrangements for improving roads which have been complained of.

**Seguin, Tex.**—Improvements to roads in Guadalupe County are planned; \$25,000 more of road bonds are to be issued immediately, making \$170,000 in all.—Address County Judge H. M. Wurzbush.

**White Rock, Tex.**—A good roads committee was recently organized here; improvements to the roads in this section are planned as soon as possible.

**Ogden, Utah.**—Council has decided to construct concrete sidewalks on Twenty-sixth street, from Adams avenue to Quincy avenue.

**Salt Lake City, Utah.**—Mayor Bransford has vetoed the resolution passed by Council directing the Board of Public Works to re-advertise for bids for the grading, curbing and guttering of Third South street, from Eleventh to Twelfth East streets. The reason assigned by the Mayor for his action is that the city cannot afford to pay for its portion of the work, which will be approximately \$9,000. He is of the opinion that no money should be spent in this way until after the people decide as to whether the bonds shall be issued. The work was advertised for some weeks ago, and the contract awarded to P. J. Moran by the Board of Public Works for \$14,800. The Council, however, never approved of it, and the object in re-advertising was to secure a lower price.

City Engineer E. C. Kelsey recommends the repaving of Main street, from South Temple to Fourth South street.

**Chatham, Va.**—The Supervisors of Pittsylvania County have appropriated \$3,500 for road macadam.

**Lebanon, Va.**—Bids are being received by the State Highway Commission, P. St. J. Wilson, Commissioner, for the construction of twenty miles of road.

**Norfolk, Va.**—Plans are under consideration for the extension of the Jamestown boulevard from the present end at Virginian Railway to the Maryland avenue entrance at the exposition.

The Board of Control has recommended to the Finance Committee the paving of Cooke avenue, between Brambleton and Highland avenues, with granite rock.

**Richmond, Va.**—City Engineer C. E. Boling has recommended to Council Committee on Streets that Main street, from Seventh to Twelfth streets, be repaved at once.

**Roanoke, Va.**—The question of good roads for this city and vicinity is now being discussed.

**Aberdeen, Wash.**—Bids have been asked for a new road to be built on the east bank of the Wishkah River, between North Aberdeen and Bear Gulch.

**Ballard, Wash.**—Plans are under discussion for new boulevard planned as extension to the Magnolia Way boulevard.—Address Councilman Armstrong.

**Puyallup, Wash.**—Council has adopted a resolution for paving Meridian street and portions of other thoroughfares in the business section.

**Seattle, Wash.**—Council is considering plans for paving East Madison street.

**Spokane, Wash.**—Councilman Baldwin, of the Second Ward will shortly introduce an ordinance providing for the paving of Post

street, from Second avenue to its southern end at Fourth avenue.

**Tacoma, Wash.**—Plans are being made for the paving of South G street, between Nineteenth and Twenty-seventh streets.

The County Commissioners are planning branch roads from the new road now being built through Julia's Gulch.

**London, Ont., Can.**—The Board of Public Works is considering the matter of paving the entire length of Carling street with asphalt blocks.

**Durango, Mex.**—The question of paving the main streets in the city with asphalt will shortly be taken up.

## SEWERAGE

**San Bernardino, Cal.**—A movement has been started to put in a sewer in base line from C street to B street.

**San Diego, Cal.**—Plans have been submitted by the City Engineer for extension and enlargement of sewers of the Florence and University Heights systems.

**San Francisco, Cal.**—Specifications are already available for contracts covering \$500,000 worth of sewers, provided for in bond issue.

**San José, Cal.**—The city officials will shortly take up the matter of improving the sanitary conditions in the Chinese quarter in this city; it is very probable that a new sewer system will be put in.

The matter of constructing half a block of sewer on William street as far as Second street has been referred to the Sewerage Committee.

**Selma, Cal.**—The Selma Canning Company has asked permission from the Town Council to lay a sewer pipe down the alley between Whitton and Sylvia streets.

**Willows, Cal.**—Council has directed Engineer R. A. Bisbee of Palo Alto to prepare plans for sewer system.—Address Engineer R. A. Bisbee, Palo Alto.

**Baltic, Conn.**—About three miles of sewerage and water mains are to be laid in this town.—Address Town Clerk.

**New Haven, Conn.**—Petitions have been granted for the construction of a sewer in Whaley avenue and in May street.

**Torrington, Conn.**—The Borough Board has voted to construct 1,000 feet of sewer.

**Athens, Ga.**—Bids will be received at any time for the purchase of \$75,000 4½ per cent. water works and sewer bonds.—Address Charles M. Snelling, Chairman of the Finance Committee.

**Elgin, Ill.**—It is expected that work of constructing the Sixth Ward sewer will be started the latter part of July.

**Rantoul, Ill.**—The members of the Village Board are considering the matter of securing a better drainage system.

**Sterling, Ill.**—The residents of the north end of the city are urging the construction of a sewer in that part of the city.—Address Board of Local Improvements.

**Indianapolis, Ind.**—The resolution providing for the construction of a main sewer in College avenue and other streets, from Falls Creek to Thirty-eighth street, has been confirmed by the Board of Public Works, and bids for the work will shortly be called.

**Kendallville, Ind.**—The Wayne General Construction Company, Fort Wayne, has petitioned the Council at Kendallville for the construction of a sewer by which it may drain its plant.

**South Peru, Ind.**—All proposals received June 5 for constructing concrete or reinforced concrete sewer, 8½ feet in diameter, and 1,578 feet long, were rejected; new bids will be received July 14, 7:30 p. m., on plans prepared by Engineer A. W. Smith; estimate, \$18,245.50.—George F. Merley, Town Clerk.

**Albia, Ia.**—The matter of extending the Washington street sewer is being considered.

**Des Moines, Ia.**—Council has ordered the construction of a sewer on Fourteenth street, from Cottage to University street.—George F. Poorman, City Clerk.

**Dayton, Ky.**—Council has rejected all bids for the construction of a vitrified brick or concrete sewer under Main street, McKinney street and Vine street.—Charles A. Bird, City Clerk; George G. Lindsey, City Engineer, 7 East Fourth street, Newport.

**Lawrence, Mass.**—The Board of Aldermen has passed an ordinance appropriating \$25,000 for the construction of a brick sewer in the northern part of the city.—C. J. Needham, Superintendent Street Department.

**Springfield, Mass.**—A favorable report will probably be made to the Board of Public Works on a petition for the extension of sewer in Clanton street.

**Hancock, Mich.**—At recent meeting of the City Council a communication was read from the Board of Public Works relative to drainage and sewerage in Condon, Anthony and Grove additions; estimated cost, \$10,450.

**Minneapolis, Minn.**—A number of new sewers have been ordered constructed, including one on Barton avenue, Melbourne avenue, and Harvard and Thornton streets.

**New Prague, Minn.**—A. Krops is preparing estimates for sewer system.—John F. Brzezki, City Clerk.

**St. Paul, Minn.**—The matter of constructing the proposed Delaware avenue sewer is still under consideration.

**Jackson, Miss.**—Bids will be received July 7 for the purchase of \$196,000 5 per cent. water and sewer bonds.—A. P. Lusk, City Clerk.

**Liberty, Mo.**—Estimates are being prepared for sewers to be constructed at a cost of \$15,000.—C. S. Murray, Mayor.

**St. Joseph, Mo.**—Ordinance has been recommended to Council providing for the construction of a sewer in district No. 63.

**Dundee, Neb.**—At the special election recently held the proposition to issue bonds for the construction of a sewer system carried.

**Exeter, N. H.**—The Sewer Committee has called for bids for laying of sewers, which were voted last March.

**Hampton, N. H.**—The Town Board has voted to expend \$10,000 at once in the extension of the sewer from Jenkins' cafe along the Hampton beach to the bridge.

**Camden, N. J.**—Council has passed an ordinance for the construction of a sewer along Carman street.

**Dover, N. J.**—Engineer Clyde Potts, of Morristown, has been engaged by the Street and Water Board to supervise the surveying that is being done along the Rockaway River watershed in Morris County; the object of these surveys is to make them the basis for proposed plans for intercepting sewers and sewage disposal work at Boonton, Dover and Hibernia, through which towns runs the Rockaway River.

**Guttenberg, N. J.**—The Mayor and Board of Councilmen are considering the construction of an 18-inch vitrified pipe sewer in and along Bergenline avenue.—Charles A. Eypper, Mayor.

**Moorestown, N. J.**—An election will be held July 14 to vote on the question of issuing \$14,000 bonds for the construction of sewers.

**Newark, N. J.**—Plans are being discussed for improvements to sewage plant in this city and vicinity; County Engineer Fred. T. Crane, of Orange, N. J., can be addressed.

**Paterson, N. J.**—The County Board of Freeholders has passed a resolution for constructing a storm sewer in Crooks avenue.

**Rutherford, N. J.**—Council has passed ordinance for sewers on Woodward, Beech, Ray and Hawthorne streets.

**Sea Girt, N. J.**—The State Board of Health has ordered Quartermaster General Murray to change the sewer system at State camp grounds at Sea Girt, to prevent further pollution of Manasquan River.

**Trenton, N. J.**—Council has passed ordinances for the construction of a sewer in Rusling street, from a point near Anderson street to Russell street; in North Olden avenue, from a point near Taylor street to Dickinson street, and in Hill's alley, from a point near Bridge street southerly to Furnam street.

**Carlsbad, N. M.**—The town authorities have decided to construct a sewerage system, and it is probable that plans and specifications will be prepared at an early date.

**Batavia, N. Y.**—Mayor Johnson has named a committee to report upon a plan for sewers and disposal plant for the town.

**Binghamton, N. Y.**—Council has decided to offer for sale \$25,000 additional sewer bonds.—Address City Comptroller.

**Buffalo, N. Y.**—The Board of Public Works is considering the construction of a sewer in Hertel avenue, between Niagara street and Cornelius Creek.

Kenmore, Cheektowaga and other growing suburbs of this city are seeking to get connection with the city sewer system.

**Frederick, N. Y.**—Harry N. Ogden, Special Engineer of the State Department of Health, states that he will recommend that this town be ordered immediately to construct a sewage disposal plant.

**Jamestown, N. Y.**—An appropriation of \$42,000 has been granted for the purpose of extending the sewer system; work will be done by day labor.—Address City Engineer.

**Lancaster, N. Y.**—The Village Sewer Commission and Engineer have for the past few weeks been industriously engaged on the preliminaries in connection with the work, and everything is now in readiness for the work on the sewer.

**Mt. Vernon, N. Y.**—Bids are soon to be advertised for the construction of a new sewage disposal plant.

**Perry, N. Y.**—Knight & Hopkins will prepare plans for sewer system estimated to cost \$28,000.—Address Village Clerk.

**Rochester, N. Y.**—A resolution has been adopted for construction of storm sewer in the alley between Mt. Hope avenue and South avenue, and South avenue from May street to sewer in Cook street; also for a sewer in Chatham street, from a point opposite Harrison street to the sewer in Hamburg street.

**Sloan, N. Y.**—The matter of carrying off the sewage of the village will shortly be taken up.—Address Town Clerk.

**Utica, N. Y.**—At recent meeting of the Board of Contract and Supply, City Engineer

O'Brien filed specifications for the construction of a brick and iron sewer in Barnes avenue, from Canal street to the Mohawk River, and a 12-inch vitrified pipe sewer in Carolina street.

**Waverly, N. Y.**—A resolution has been carried providing for the construction of a sewer in Fulton street, this town, to extend north from Clinton avenue to the north line of the Swain property.

**Akron, O.**—Ordinances and resolutions have been presented to Council asking for many sewers and street improvements; all were referred to the proper committee.

**Ashtabula, O.**—The Board of Public Service will proceed with the construction of sewer in Colorado street and Humphrey street.

**Cambridge, O.**—Resolutions have been adopted by Council for constructing sanitary sewers in three streets.

A special election will be held July 21 to vote on the question of issuing bonds for the construction of a system of sanitary sewers.—E. N. Walters, President of Council.

**Cincinnati, O.**—Work will shortly begin on the construction of a sewer in Fisher avenue, Collins avenue, Power street and several alleys; City Engineer Sundmaker may be addressed.

**Galion, O.**—Plans for the sanitary sewer system have been prepared by Bradbury and Shute of Columbus; the city will be divided into eleven districts and will be modeled after the one at Mansfield.

**Jefferson, O.**—County Surveyor Matson is preparing plans and estimates of the cost of building sewers in North Chestnut street; the cost of disposal plant will also be considered.

**Marion, O.**—The Sewer Committee has accepted specifications for the construction of a 12-inch terra cotta pipe sewer to be located in West Green street.

**Newport, O.**—The Sewer Committee has instructed City Engineer Morlidge to prepare plans and specifications for a sewer in East Tenth street, near the corporation line.

**Oberlin, O.**—State Board of Health has refused to approve the temporary work on the new sewer farm; the original plans will have to be carried out with the expenditure of \$16,000 for the work.

**Oxford, O.**—There will be an election July 6 to decide the matter of bond issue for installing a system of sewerage in the town.

**Salem, O.**—Council has definitely decided on the construction of sewers in West Main street.

**Springfield, O.**—Bids will soon be opened for the construction of two storm sewers, to be located in Kenton and West Main streets.

**Steubenville, O.**—The Board of Public Service has received a petition from the property owners on Popular avenue, asking that the street be paved and a sewer constructed.

**Urbania, O.**—A new sewage disposal plant for this city has been proposed.—Address President Anderson of the City Council.

**Van Wert, O.**—The State Board of Health has ordered the township to build an intercepting sewer and filtration plant at an estimated cost of \$50,000.

**Zanesville, O.**—Plans for a district sewer have been approved by the State Board of Health.—Dr. Bryan Santon, Cincinnati, President.

**Paul's Valley, Okla.**—John Nuveen & Co., of Chicago, have purchased \$45,000 sewer and water works bonds at 101.111.

**Marshfield, Ore.**—The City Engineer has been instructed to prepare plans and specifications to sewer all of South Marshfield south of Mill's Slough, as one district.

**Altoona, Pa.**—Councilmen are discussing the feasibility of asking for a loan of \$125,000 additional, to be devoted to the construction of a sewer system, which is badly needed in this city. City Engineer Engstrom is working out a system for the city.

It will practically include two distinct systems, one comprising the sewers for drain pipes and the like, and the other being the system of storm sewers which have been constructed during the past few years and which are being contemplated to carry away the surface water in case of heavy rains. If the new system is adopted by the city the sewers which are now in use will be made a part of the new system.

**Bradford, Pa.**—Bonds, \$5,000, will be issued for the establishment of a sewer fund; Council has passed an ordinance for a sewer on Homestead avenue.

**Butler, Pa.**—The erection of a new \$100,000 sewage disposal plant for this place is being considered.

**Cambridge Springs, Pa.**—The Borough Council has passed ordinance for 12-inch sanitary sewer extension in Church street and 8-inch in Thomas, Spring, Beach, Elder and Cummings streets, on plans, etc., prepared; bids to be received at once.—J. F. Hennbaugh, Burgess; A. H. Drake, Borough Clerk.

**Harrisburg, Pa.**—Two small sewers running from the new State Capitol into Fourth street have been found inadequate to carry

off the flow of water from the building during heavy rains, and the Board of Public Grounds and Buildings will construct an additional sewer.

**Hazleton, Pa.**—Borough Engineer Moore has presented preliminary plans for the proposed sewerage system to drain Green Ridge.

**Ingram, Pa.**—An ordinance has passed the Borough Council authorizing the construction of a 9-inch vitrified pipe sewer on Tunnel street, from the northerly line of Catherine street to a point in Tunnel street two hundred and seventy feet north from the northerly line of Catherine street.—W. C. Carman, Burgess.

**Indiana, Pa.**—The city has been ordered by the State Board of Health to construct a sewage disposal plant, but is without funds; a special election to appropriate \$50,000 for the purpose will be necessary.

**Lebanon, Pa.**—On motion of Select Councilman George D. Krause, a resolution has been adopted by joint Councils creating a Sewerage Commission, which will begin work at once by securing information relative to the establishment and financing of complete systems of storm and house sewerage and to report to Council as soon as possible; Mr. Krause is in the Commission, which includes six other members of Council.

**McKeesport, Pa.**—A new sewage disposal plant here is badly needed.—Address the Mayor.

**Merai, Pa.**—The Borough Council has been notified by the State Board of Health that the town would have to build a sewage disposal plant, but allows until 1911 in which to do it.

**Millville, Pa.**—Council, in special session, instructed the Sewer Committee to consult with an engineer at once and have plans prepared immediately for a sewage disposal plant. This action was caused by a letter received from State Attorney General McCarter, who informed Council that if a disposal plant was not erected or in course of construction by September the State would bring suit against the city; this plant will cost \$20,000.

**Minersville, Pa.**—The Board of Health has voted to build a large sewer in the town notwithstanding the fact that the Council has refused to appropriate funds for the construction.

**New Castle, Pa.**—The Big Run sanitary sewer was revived again when the Sewer Committee of Councils appointed a committee to look over the plan and make a report and recommendation.

**Pittsburg, Pa.**—Engineers Chapin and Knowles, Frick Building, are preparing plans for a reinforced concrete sewage disposal plant, at Warner station, for the City Home; cost about \$20,000.

**Pittston, Pa.**—Select Council has passed ordinances for the construction of sewers in Wood and Market streets and on Tompkins street.

**Plymouth, Pa.**—Council has been asked to extend the Center avenue sewer to the river.

**West Chester, Pa.**—Members of the Borough Council have again taken up the matter of providing the town with an up-to-date sewerage system, and have arranged to submit their plans to the people and have a vote taken whether a loan of \$125,000 shall be made to pay for the improvements.

**Rock Hill, S. C.**—At recent meeting of the Chamber of Commerce a resolution was passed that Council should proceed at once to construct a system of sewerage.

**El Paso, Tex.**—Council has employed Hering & Fuller to prepare specifications for sewage disposal plant.—E. Kohlberg, Chairman of the Board.

**Montpelier, Vt.**—The matter of the Barre street sewer is being considered by Council; the present sewer is inadequate and it is probable that a new sewer will have to be constructed.

**Bluefield, W. Va.**—The question of establishing a new sewage disposal plant is being discussed.

**Neenah, Wis.**—The bad condition of the south sewer on Wisconsin avenue, between Commercial and Church streets, has been called to the attention of Council.

**Reedsburg, Wis.**—The City Clerk has been directed to advertise for bids for constructing sewers and cement walks.—A. W. Huebing, City Clerk.

## WATER SUPPLY

**Auburn, Ala.**—A water works system is to be installed at the Polytechnic Institute in this city.

**Gadsden, Ala.**—An election will be held July 20 to vote on the question of issuing \$125,000 bonds for the purchase of water works.

**Decatur, Ark.**—A stock company has been organized for the purpose of establishing a system of water works.—Address B. B. Saunders.

**San Francisco, Cal.**—The Fire Commissioners will expend \$15,000 to secure plans for auxiliary fire protection water system.

—Address Secretary of the Fire Commissioner.

**East Point, Ga.**—An election will shortly be held for the purpose of voting \$85,000 bonds for the establishment of a water works and sewerage system.

**Macon, Ga.**—Council will improve the water system.—Address J. E. Paul.

**Danvers, Ill.**—Funds have been appropriated for operating and maintaining a water works system in the village.—Address Village Clerk.

**Des Moines, Ia.**—As a result of water rates it is probable that the city may consider the purchase of the present plant or the construction of a new one.—Councilman John McVicar may be addressed.

**Great Bend, Kan.**—The citizens have voted \$60,000 bonds to establish a city water works plant; the franchise of the water company expires next Spring.

**Linwood, Kan.**—Bonds, \$40,000, have been authorized for a municipal water works and electric light plant.

**Covington, Ky.**—Consulting Engineer George Hornung's report on surveys, plans and estimates for an emergency reservoir and for auxiliary pipe lines was referred by the members of General Council in Committee of the Whole to the Water Works Commissioners to investigate and report back.

**Plaquemine, La.**—City officials will shortly take up the matter of constructing a water system.

**South Parish, Me.**—The Village Trustees will shortly take up the matter of constructing a water system.

**Lowell, Mass.**—The Water Board has voted to extend the water system in Wedge street as petitioned for.

**Methuen, Mass.**—The Town Selectmen will shortly take up the matter of securing \$15,000 for the extension of the water system.

**Plainville, Mass.**—The town has voted to appropriate funds for the construction of a water works system; cost, \$35,000.

**Detroit, Mich.**—Bids will be received July 14, 2 p. m., for \$250,000 3½ per cent. semi-annual water bonds.—E. W. Pendleton, President, Board of Water Commissioners; Benj. F. Gurney, Secretary.

**Grand Rapids, Minn.**—Council has appointed a committee to investigate the cost of water system.

**Alden, Minn.**—Estimates are being prepared for a \$5,000 system of water works.

**Larimore, Mich.**—The installation of the municipal system of water works is being advocated with good prospects; an issue of bonds to the amount of \$100,000 is proposed in this connection.

**Edgemont, Mo.**—About \$7,000 will be expended in extending water mains.—Stephen LaPage, Mayor.

**Galena, Mo.**—The water mains in this city are to be extended.

**Weston, Neb.**—About \$10,000 will be expended for a water works system.—F. Pacal, City Clerk.

**Jersey City, N. J.**—The city is considering the matter of purchasing the water plant in Boonton, N. J.; it is proposed to build an additional reservoir for storage in the Longwood Valley a few years hence.—Address Mayor of Jersey City.

**Oswego, N. Y.**—Plans have been completed for the construction of a pump house to be built on the lake shore in connection with the lake water plant; bids will soon be asked; estimated cost, \$12,000.

**Verona, N. J.**—At a special meeting of the Borough Council July 28 was decided upon for the special election to vote on the matter of establishing a water works system for the borough.

**Westmont, N. J.**—A meeting of the citizens of this borough was recently held to discuss the matter of erecting its own water plant.

**Minot, N. D.**—City Engineer Severance is preparing plans for water system, for which \$30,000 bonds have been authorized.

**Columbus, O.**—The Water Works Department recommends an issue of \$75,000 bonds for the extension of water works. The Board of Public Service has ordered the construction of a new 20-inch water main to run from East Long street north on Cleveland avenue to Buckingham street.

Council has appropriated \$8,000 with which to build a concrete retaining wall at the new water purification works.

**Portsmouth, O.**—Upon recommendation of City Engineer Hudson, 4,000 feet of 10 or 12-inch water main will have to be bought for West Front street before it is paved.

**Shawnee, O.**—Citizens will vote on proposition to issue \$25,000 bonds for installing municipal water works system.

**Bristow, Okla.**—Council has directed specifications to be prepared for water system estimated to cost \$35,000.

**Duncan, Okla.**—Estimates are being prepared for water system to cost \$12,000.

**Fairview, Okla.**—The city contemplates voting on bond issue to construct electric light plant and water works.—Address Mayor.

**Sapulpa, Okla.**—Council will expend \$30,000 for water system.

**Altoona, Pa.**—It is only a question of a year or two until the Water Department will require another loan for continuing the work on Lake Altoona; it was not expected that the first loan would more than half complete the undertaking; an ordinance for a water loan is likely to be presented in Councils soon, so that the people may vote on the proposition at the fall election.

**Chestertown, Pa.**—The sale of the \$28,000 water bonds offered by the Commissioners of Chestertown to defray the expense of the purchase of the water works from the present corporation, and to make needed improvements was made to Boden, Watts & Co. and Hamilton & Co., of Baltimore, in a combined bid, they purchasing the entire lot of bonds for \$29,125.60, a premium of \$1,125.60; the bonds bear 4 per cent. interest and are redeemable, one every year for twenty-eight years.

**Lebanon, Pa.**—The citizens will vote July 21 on proposition to borrow \$240,000 for a new pipe line from the South Mountain water works to the city.

**Leechburg, Pa.**—The Borough Council has set July 25 for a special election to secure the authorizing of the voters for the issuance of \$10,000 additional bonds to pay off the claims of the Leechburg Water Company and other debts outstanding.

**Reading, Pa.**—At a special meeting of Common Council the legislation for the loan of \$300,000 for plants to filter the city's water supply was passed finally.—Address President Rick.

**Ridgway, Pa.**—State Health Commissioner Dixon has approved the plans for the construction of a filter plant at Ridgway.

**Steelton, Pa.**—The specifications are about ready for extending the intake pipe at the borough pumping station, which the Borough Council directed the Water Board to draw up; these plans provide for an improvement which, when finished, will supply the town with enough water at all times, whether the river be low or high. At present the intake pipe is too short in time of low water, making the supply proportionately low and sandy at these times. All this will be avoided by the extension of the pipe. Everything possible is being done at the pumping station to get rid of the sand sucked in, and a number of different devices are being used. From the time the specifications are ready until the Council meeting, July 6, when the bids will be received, preparations will be made for the opening of the contract. The work will be started as soon as possible so as to have it completed by the end of the Summer season, when the river is lower than at other times of the year.

**Tarentum, Pa.**—By a vote of 568 to 73, the citizens, at a special election, decided to increase the borough indebtedness \$100,000 for the erection of a municipal water plant. Test wells have been sunk and a supply of pure water found near Bull Creek.

**Columbia, S. C.**—The water system in North Columbia will be extended; Engineer Chisholm may be addressed.

**Dallas, Tex.**—Bids will be received July 6 for the purchase of \$430,000 water work improvement bonds and \$50,000 street improvement bonds.—Address City Commissioner Winslett.

**Elizabethton, Tenn.**—It has been decided to construct a water works system; preliminary plans are now under way.

**El Paso, Tex.**—The International Water Company will extend the water mains.—Address Secretary.

**Platte, S. D.**—Estimates are being prepared for water system to cost \$80,000.

**Temple, Tex.**—The city will expend \$30,000 in improving and extending the water works plant recently purchased at a cost of \$120,000. P. Bracken is Superintendent; N. N. Nirkushoid, Dallas, Tex., is Architect; C. N. Campbell is Chairman Water Commission.

**Brandon, Vt.**—Estimates are being prepared for improvements to be made to the water system at a cost of \$80,000.—F. H. Farington, Chairman.

**Graham, Va.**—All bids received May 25 for the \$20,000 water and street improvement bonds have been rejected.

**Rural Retreat, Va.**—John W. Eiffert and associates contemplate the construction of a water works system.

**Cathlamet, Wash.**—The Town Council has granted a franchise to a local corporation to establish and maintain a water works in this city; the system will be in operation by December next.

**Spokane, Wash.**—The city is considering the purchase of the water system now in operation in Monroe Park addition, and which is not in just the best condition.

**Seattle, Wash.**—An ordinance is before Council authorizing an issue of \$2,250,000 bonds for the extension of the Cedar River water system.—Address City Attorney Scott Calhoun.

**Lovell, Wyo.**—The city is advertising \$15,000 water works bonds for sale.

## LIGHTING AND ELECTRICITY

**Huntsville, Ala.**—Engineers are at work on locations for dams for the Muscle Shoals Hydro-Electric Company; it is planned to construct a power plant at the shoals on the Tennessee River, with a capacity of 200,000 horsepower.

**Russellville, Ala.**—The citizens have voted \$24,000 bonds for the construction of an electric light plant and water works system.

**Baird, Cal.**—William Ellery, of Redding, Cal., has filed application for 124,000 cubic inches of water in the McCloud River, near this town, for the purpose of generating electrical power.

**Gredley, Cal.**—Estimates are being prepared for electric light system.—C. A. Moore, Trustee.

**Los Angeles, Cal.**—The Los Angeles Railway Company contemplates purchasing in the near future two 100-kw. motor generators, one 600-kw. motor generator and nine transformers.—Howard B. Huntington, General Manager.

**Oroville, Cal.**—The Oroville Water, Light & Power Company contemplates expending about \$50,000 on improvements in Oroville. It is stated that the company contemplates reducing the prices of electricity for motors.—J. W. Goodwin, President.

**St. Andrews, Fla.**—P. J. McSween will prepare plans for a plant to be constructed by the St. Andrews Light and Power Company at a cost of \$12,000.

**Dwight, Ill.**—Siegert Brothers, owners of the electric light plant at Dwight, expect to install \$7,000 worth of new machinery about the first of September.

**Sycamore, Ill.**—Southeastern Electric Railway Company has been incorporated with \$50,000 capital to construct and operate a railway from Woodstock, Ill., to this city; W. L. Abbott, E. C. Winane and M. A. Garrett, of Chicago, are incorporators.

**Garrett, Ind.**—The city contemplates making improvements to the municipal electric lighting plant, the cost of which is estimated at \$15,000.—R. S. Ashe, Richmond, Ind., Engineer; William Watson, City Clerk.

**Marion, Ind.**—The Superintendent of the electric light plant recommends the purchase of one 150-kw. belted single-plane, sixty-cycle, 2,200-volt generator, with exciter, \$2,100; one 250-kw. engine, type three-phase, sixty-cycle, 120 r. p. m., \$5,700; one 375-kw., 60-cycle, three-phase, 2,300-volt, 120 r. p. m., with excitors, \$6,600; one 500 kw., 60-cycle, three-phase, generator engine type, 120 r. p. m., \$8,300.—Address Superintendent Otis Weesher.

**Mt. Vernon, Ind.**—Council has granted a franchise to Hester & Goodrich to operate a gas plant; a stock company will be organized with a capital of \$50,000.

**Sidney, Ia.**—The Sidney Electric Light, Heat and Power Company has been organized to build an electric light plant.—Address City Clerk.

**Linwood, Kan.**—Bonds, \$40,000, have been authorized for the construction of water works and electric plant.

**Stockton, Kan.**—Harry Reams, of Beloit, has been granted a franchise to operate an electric light plant in this city.

**Cadillac, Mich.**—The Village Council is contemplating rebuilding the dam on Cedar Creek, which was recently destroyed, to furnish power to operate the municipal electric light plant.

**Di Mondale, Mich.**—Council has contracted with the Michigan Power Company to furnish the village with electric light and power.

**Albert Lea, Minn.**—Council has granted a franchise to Albert Lea Light & Power Company to furnish additional light and power.—C. L. Swenson, Mayor.

**St. Cloud, Minn.**—The Union Electric Power Company has been incorporated with \$100,000 capital to install an electric power plant in this city; A. G. Whitney and others are interested.

**Kirkville, Mo.**—The Kirkville Light, Power and Ice Company, recently incorporated, will establish electric light and power and ice plants.—Charles Miller, President; C. J. Baxter, Secretary.

**Genoa, Neb.**—The Village Council has employed John W. Early, Columbus, Neb., to prepare plans, etc., for the proposed municipal electric lighting system, to be installed at a cost of \$11,000. The equipment yet to be purchased includes a 30-h.p., 3-phase, 60-cycle, 220-volt motor, alternating current, and transformers of various sizes.

**Newark, N. J.**—A special committee has been appointed to secure plans for lighting the entire city with electricity.—C. H. Robinson, Clerk of the Committee.

**Minot, N. D.**—Council has decided to operate the pumping station by electricity.

**Dayton, O.**—Bids for electrical equipment for the new County Infirmary, submitted under the original specifications, have been rejected by the County Commissioners, and new proposals will be advertised for under

new specifications; the fact that the original specifications gave one concern an advantage over all other bidders resulted in the rejection of the proposals.

**Bristow, Okla.**—Estimates are being secured for establishing a light and water plant.

**Cazadero, Ore.**—The power plant of the Portland Railway, Light and Power Company at Cazadero was partially destroyed by fire; the plant is valued at \$750,000; it will be rebuilt.

**Chambersburg, Pa.**—The Franklin County Commissioners will establish an electric light plant at the county infirmary.—Address Secretary of the Commissioners.

**Johnstown, Pa.**—Jacob Cauffiel has purchased the electric light plant in Franklinboro and will organize a company and bid for franchise for furnishing light to the city and surrounding territory; the plant at Franklin will be enlarged as soon as the company is formed.

**Pittsburg, Pa.**—City Architect John P. Brennan is receiving bids for a two-story power plant at Marshalsea, for the Department of Charities and Correction—James P. Shaw, Director.

President E. R. Walters, of Select Council, has appointed the special committee authorized several weeks ago to consider the incandescent light contract ordinance; the members are Charles Stewart, P. B. Kearns and William McKelvey. The contract with the Sunlight Illuminating Company expires July 1, and no new contract can be made until this measure is passed.

**Anderson, S. C.**—W. H. Harrison, Jr., of Biloxi, Miss., who has secured franchise for gas works at Anderson, will install the plant during Summer and Fall.

**Limestone, Tenn.**—The Trustees of the Bethesda Academy will purchase an electric plant.—W. T. Morgan, President.

**Georgetown, Tex.**—The Georgetown Water and Light Company will expend \$25,000 in improvements, including installation of second dynamo in light plant.—C. S. Hale, Manager.

**Salt Lake City, Utah.**—Engineers of the Utah Light and Railway Company are engaged preparing plans for the power plant to be built in and near the Weber Canyon by the Harriman System; actual construction work will begin within a few weeks, and the plant will be completed and ready for use this Fall; the plant will generate 3,000 h.p., which will be distributed in Salt Lake City and Ogden.

**Danville, Va.**—The city authorities will establish a central electric light plant at a cost of \$150,000.—Address Frank Talbot, Superintendent of Water, Gas and Electric Department.

**Bremerton, Wash.**—A franchise has been granted by Council to Ezra Norman to operate a gas plant and lay gas mains in the city streets.

**Little Falls, Wash.**—Work on a power plant costing \$500,000 has been started by the Washington Water Power Company, of Spokane, at Little Falls, on the Spokane River, near Reardon; a head of 68 feet will be secured and 30,000 h.p. developed, the work requiring nearly two years.—D. L. Huntington, Manager.

**Tacoma, Wash.**—The Current Power Company will make a proposition to Council to install a power plant in the Narrows, similar to the one at Strumps Rapids; J. H. Boothroyd, Secretary, states that the plant will furnish 10,000 h.p. and can be installed for \$250,000.

**Hartford, Wis.**—Council will authorize the building of a municipal light plant at a cost not to exceed \$27,000; provision for two 300-volt, 60-cycle, single-phase, alternating current plant, with 30 and 60-kw. generators.

**Portage La Prairie, Man., Can.**—Engineer Skinner will report to the Council the best method of lighting the city.

## FIRE EQUIPMENT

**Little Rock, Ark.**—The Fire Committee has charge of securing additional fire apparatus.

**Piedmont, Cal.**—A site is soon to be purchased for a new fire house and new fire engine.—Address Chief of the Fire Department of Piedmont.

**San Francisco, Cal.**—Specifications for the new fireboats are being rushed to completion, \$10,000 having been set aside for this purpose; arrangements have been made so that \$2,000,000 can be laid out on the fire protection system within a year.

**San Pedro, Cal.**—The City Trustees will install a fire alarm system and purchase other fire apparatus.

**Boulder, Col.**—O. P. Clark, City Clerk, will receive sealed bids for construction of two fire stations, according to plans by I. T. Shockey.

**Savannah, Ga.**—The Fire Committee of Council recently authorized Chairman Davan to secure plans for new two-story brick fire house, 50x85 feet in dimensions.

**Joliet, Ill.**—A new site is to be secured for new fire house for No. 3 Company.—Address Mayor Cronin.

**Rock Island, Ill.**—Council has decided to build fire station at Twenty-seventh street and Fourth avenue.

**Vincennes, Ind.**—Address City Clerk for further information regarding new fire hose for Hose Company No. 4.

**Council Bluffs, Ia.**—F. C. Jensen, 305 Broadway, has prepared plans for new \$10,000 brick and stone fire station.—A. W. Cassidy, City Clerk.

**Davenport, Ia.**—Council is making arrangements for establishing new fire station at the corner of Twenty-seventh street and Fourth avenue.—Address Fire Chief Hawk.

**Des Moines, Ia.**—Council will build fire station at Twenty-seventh street and Fourth avenue.

**Dubuque, Ia.**—The Fire Department has petitioned for 2,000 additional feet of hose.

**Sioux City, Ia.**—Plans are under way for purchasing additional hose for Fire Department.—Address Chief.

**Abilene, Kan.**—Council will purchase one combination fire wagon, 800 feet of hose, etc.

**New Orleans, La.**—A recent fire here did large damage and destroyed chemical hose house on Vilere street and all the equipment at a loss estimated at \$5,000.—Address Fire Department.

**Lawrence, Mass.**—Council has passed an ordinance for borrowing \$50,000 for the construction of a new fire engine house in Ward 5 and for the installation of a new fire alarm system for the city.—Address Mayor Kane and City Clerk Corcoran.

**Lynnfield, Mass.**—Architect M. F. Burk, 224 Union street, Lynn, has plans for a frame chemical engine house for the town of Lynnfield.

**Melrose, Mass.**—Chief Edwards has asked the Board of Aldermen for an appropriation of \$1,500 for the Fire Department; new hose is to be purchased, etc.

**North Andover, Mass.**—Plans have been prepared for new engine house and town offices.—Address Committee in Charge.

**St. Louis, Mo.**—A. J. O'Reilly, President Board of Public Improvements, will soon have plans prepared for rebuilding two two-story engine houses for the Fire Department; also has had plans made for the two-story engine house No. 49; cost, \$30,000 and \$15,000, respectively.

**Manchester, N. H.**—Bids are being received for two new combination hose wagons for the Fire Department.—Address Mayor Reed or Chief Lane.

**Irvington, N. J.**—Board of Fire Commissioners will receive proposals for furnishing 1,000 feet, more or less, of standard double jacket fire hose.—Address Councilman Boarger.

**Kingsland, N. J.**—The question of paid Fire Department and the erection of new fire houses and necessary equipment are being considered.—Address Town Clerk.

**West New York, N. J.**—Proposals will be received by the Town Council for \$18,000 bonds for new fire engine house.—James L. Wolfe, Town Clerk.

**Buffalo, N. Y.**—The Fire Department has recommended the following improvements for the public school buildings: New fire escapes for 21 schools; extensions and other changes to present fire escapes on 20 schools; new fire escape exits for Central and Western Park High School and 21 grade schools; bids will later be received by Colonel Francis G. Ward, Commissioner of Public Works.

**Poughkeepsie, N. Y.**—Mayor Sague has recommended the purchase of a new engine for the Niagara company.

**Woodhaven, N. Y.**—The Woodhaven Exempt Firemen's Association has decided to secure property on Broadway and Woodhaven avenue for new building, to cost about \$10,000.

**Winston-Salem, N. C.**—Council is arranging for a new fire station for Company No. 2.

**Rock Lake, N. D.**—Bids will be received July 6 for the purchase of a 60-gallon chemical engine.—H. B. Gray, City Clerk.

**Alliance, O.**—Charles O. Silver, City Auditor, is receiving bids for \$7,000 bonds for new fire station.

**Cincinnati, O.**—A new \$40,000 fire engine house is to be erected at the corner of Pearl and Martin streets.—Address Chief of the Fire Department.

**Findlay, O.**—A resolution has been passed favoring the building of new engine house here, to be 36x90 feet.—Address Fire Chief.

**Marietta, O.**—The question of a new fire station is being discussed; a site next to the City Hall has been secured for modern new building.

**Wellsville, O.**—Council is considering the erection of a new Fire Department building.—Address Fire Chief.

**Wyoming, O.**—All bids were rejected for the erection of a Fire Department building; it will be readvertised.—Josiah Kirby, Mayor; W. A. Clark, City Clerk.

**Sapulpa, Okla.**—Council will expend \$10,000 in equipping Fire Department.

**Wilkes-Barre, Pa.**—Councils are considering the question of repairs to City Hall and fire engine houses.

**Beaumont, Tex.**—Council recently considered sites for new fire station.—Address Mayor Fletcher.

**Lockhart, Tex.**—It is proposed to erect a new fire house.—Address the Mayor.

**Ellensburg, Wash.**—Council will purchase hose cart and hose.

**Charleston, W. Va.**—Chief Rand of the Fire Department recommends the erection of an additional engine house and the purchase of fire apparatus.

**Appleton, Wis.**—The sum of \$5,000 has been petitioned for purchase of an up-to-date fire engine for the Fire Department.

## PUBLIC BUILDINGS

**Hollywood, Cal.**—The Board of Trustees invites proposals for a site for new City Hall.

**Pomona, Cal.**—The question of erecting new City Hall, to cost about \$50,000, is being considered by the Board of Trustees.

**Santa Paula, Cal.**—Plans are under way for new City Hall, to cost about \$4,000.

**Yuba City, Cal.**—Work is to be commenced in the near future on new Town Hall, to be erected on Second street.

**Washington, D. C.**—Plans are under way for new \$200,000 building for the Court of Appeals, District of Columbia; plans are under way in the office of Elliott Woods, Superintendent of Capitol Building.

**Bartow, Fla.**—John M. Keen, Lakeland, Fla., is Chairman of the Polk County Commissioners and can give further information regarding new Court House, to be of brick and stone, three stories, and cost about \$84,000.

**Augusta, Ga.**—L. P. Goodrich has completed plans for new City Hall.—Address Mayor Dunbar.

**Hillsboro, Ill.**—The Jail Committee of the Board of Supervisors has employed F. Oswald of Alhambra to prepare plans and specifications for new jail and Sheriff's residence, to cost about \$25,000.

**Joliet, Ill.**—A site at Clinton and Scott streets has been proposed for new City Hall, which is planned to cost about \$250,000.—Address Mayor Cronin.

**Kewanee, Ill.**—Plans are under way for the erection of a new addition to the City Jail; it is probable property between the present Jail and the City Hall will be used for this purpose.—Address Alderman Stoneberg.

**Springfield, Ill.**—The Sangamon County Board of Supervisors is in favor of consolidation of the County Jail and City Prison and erection of a fine new building to cost a large amount.—Address either J. H. Plunkett, T. E. Lyon or J. F. Smith.

**Muncie, Ind.**—A meeting of the Building Committee of Council with the Board of Works was held in the Mayor's office recently to discuss new city building; Architect Kobele is to prepare plans.

**Winfield, Kan.**—P. H. Weathers, Hall Building, Kansas City, Mo., has prepared plans for a new jail for Cowley County.—H. Abrams, County Clerk.

**Baltimore, Md.**—Bids are soon to be asked for new jail to be erected at Madison and Constitution streets, to be three stories high and cost \$150,000.

**Northampton, Mass.**—At a recent meeting of the City Hall Commission the erection of a new building was discussed.

**Grand Rapids, Mich.**—The Board of Education will petition for an appropriation of \$100,000 for two new schools.

**Rolling Fork, Miss.**—The plans of the F. B. Hull Construction Company, Jackson, Miss., were accepted for building another story to the jail and new cells for same, at Rolling Fork, for Sharkey County.—George W. West, Clerk Board of Supervisors.

**Hannibal, Mo.**—The question of new City Hall at Fourth street and Broadway is being discussed; Mayor O'Brien is in favor of new building, for which \$75,000 bonds are proposed.

**Lancaster, Mo.**—The Board of Education is receiving sketches for a school building, to cost \$20,000.

**St. Louis, Mo.**—Architects Milligan & Wray have prepared plans for adding two five-story wings and a three-story maniac ward building to the Insane Asylum for the Board of Public Improvements. A. J. O'Reilly, President, \$600,000 and \$75,000, respectively.

**A. J. O'Reilly, President Board of Public Improvements, has had plans prepared for fireproofing the west wing of the Poor House; cost, \$35,000.**

**Omaha, Neb.**—At the recent meeting of Council the question of remodeling jail was discussed.

**Architects Fisher & Lawrie are preparing preliminary plans for a two-story \$80,000 school building for the Board of Education.—J. F. Burgess, Secretary.**

**Architects F. W. Clarke & Co. are preparing preliminary plans for a twelve-room**

\$60,000 school building for the Board of Education.

**Clayton, N. J.**—Architects Seymour & Paul A. Davis, Philadelphia, Pa., have plans for a \$40,000 three-story high school building for the Board of Education, care William Pierce; \$40,000.

**Hoboken, N. J.**—Max J. Berger, of Hoboken, N. J., has prepared plans for a new wing for the County Hospital for the insane at Snake Hill.

**Jersey City, N. J.**—Architects John T. Rowland, Jr., and Frank Eurich, Jr., are receiving estimates for alterations to schools Nos. 26 and 24.

**Newark, N. J.**—The City Hall Commission recently discussed new annex to be erected on Franklin street.

**Buffalo, N. Y.**—The Committee on Alms-house of the Board of Supervisors, E. P. Ouchie, Chairman, will retain an architect to prepare plans for a new mortuary building or morgue on the Erie County Alms-house grounds.

Council has authorized Francis G. Ward, Commissioner of Public Works, to have plans prepared for two one-story portable school buildings.

**Catskill, N. Y.**—Architect William J. Beardsley, Poughkeepsie, has prepared plans for a jail at Catskill, for Greene County.

**Geneva, N. Y.**—Mayor Rose has approved resolution passed by Council to submit to the taxpayers the proposition to expend \$130,000 for the building of the City Hall.

**Jamaica, N. Y.**—A new Borough Hall has been proposed for Queens Borough.—Address Borough President Gresser for information.

**New York, N. Y.**—Architect Edward P. Casey is preparing plans for a five-story \$175,000 police station.

Architects Hoppin & Koen have prepared plans for a five-story police station for the Police Department; cost, \$175,000.

**Niagara Falls, N. Y.**—A site at Main street and Pine avenue has been proposed for new City Hall building.

**Rochester, N. Y.**—Plans have been completed for new additions and improvements to be made to the Police Headquarters Building here.—Address Police Department.

**Cincinnati, O.**—Arrangements are to be made by the Board of Public Safety and Committee on Finance of Council for purchase of property for new patrol house and police station for the Second District.

**Cleveland, O.**—Architect F. S. Barnum, care Board of Education, has plans about completed for the twenty-room school building on Columbia avenue; \$80,000.

**Bartlesville, Okla.**—Council proposes to vote bonds for the purpose of erecting a new City Hall, to cost about \$50,000.

**Enid, Okla.**—A new City Hall, to cost \$100,000, is proposed.

**Shawnee, Okla.**—An election will be held in July to vote on the question of issuing \$100,000 in bonds for the purpose of building convention hall.—Address City Clerk.

**Bentleyville, Pa.**—Steps have been taken by the School Board for the establishment of a high school.

**Pittsburg, Pa.**—Plans have been completed for one of the most extensive prisons in the country, to cost about \$5,000,000, and to be built principally by convicts; Robert W. Herbert, of the Department of State Charities, can be addressed.

The Department of Public Safety is having plans prepared for a new police patrol station in the Forty-third Ward, to cost about \$15,000, for which appropriation has been granted.

**Washington, Pa.**—Plans have been approved for new Jail and City Prison.—Address J. H. Plunkett.

**Bishopville, S. C.**—Bids will be received July 14 for the purchase of \$85,000 5 per cent., 15-29-year Lee County Court House bonds.—W. A. James, Secretary.

**Stephenville, Tex.**—The city will vote, July 14, on the issuance of \$7,500 bonds for a new City Hall.—N. C. Baldwin, Mayor.

**Welch, W. Va.**—A large new annex is proposed for the McDowell County Court House, to be of brick and stone and after plans by W. E. and E. L. Shufflebarger, Bluefield, W. Va.

**Green Bay, Wis.**—C. E. Bell, Minneapolis, Minn., has prepared plans for new Court House, which is to be modern in every detail and cost about \$230,000.

## ELECTRIC RAILWAYS

**Canon City, Col.**—W. O. Bourne, Pueblo, Treasurer of the Kansas-Colorado Railroad Company and the Kansas-Colorado Electrical Transmission Company, states that construction contracts will be let as soon as surveys are completed, and it is probable that the work will go on rapidly; right-of-way has not been secured; surveys are now under way; the line will extend from Canon City to Pueblo and Dodge City, Kan., to Scott City, Kan., 350 miles in length; A. H. Atwater, Canon City, President; capital of

each company, \$5,000,000; C. W. Davis, Ben. L. Allen and J. S. Greene are the Engineers; headquarters have been located in Pueblo.

**Golden, Col.**—Rees C. Vidler and other Denver capitalists are interested in a plan to build an electric railway from Golden to the top of Mount Lookout.

**Grand Junction, Col.**—Morris K. Devereaux and Eugene S. Sunderlin will apply for a franchise to construct a street railway in Grand Junction.

**Wood River, Ill.**—The Wood River, East Alton and Bunker Hill Traction Company's projected line will extend from Wood River to Bunker Hill, Ill., via East Alton and Belhalto, 19 miles; surveys have been made and right-of-way partly secured.—Sheppard & Morgan, Edwardsville, Engineers; J. T. W. Rudesill, East St. Louis, President.

**Woodstock, Ill.**—The Northeastern Electric Railway Company has been incorporated to construct an electric railway from Woodstock, through the Counties of McHenry and De Kalb to Sycamore, De Kalb County; principal office, Chicago; capital stock, \$50,000. Incorporators: Clinton G. Lumley, E. C. Spinney, Irving D. Stevens, E. B. Harang, F. H. Rhodes, William L. Abbott, George W. Lyndon, George T. Goodrow, Charles A. Spenny, L. C. Winans, B. J. Simpson, M. A. Garrett, B. E. Livingston, E. P. Starmberg and Darius A. Leland.

The Woodstock & Sycamore Traction Company has been incorporated to build an electric railway from Woodstock, McHenry County, to Sycamore, De Kalb County, Ill., 38 miles. Incorporators are Clinton G. Lumley, E. C. Spinney, Irving W. Stevens, E. B. Harang, S. H. Rhodes, William L. Abbott, George N. Lyndon, George T. Goodrow, Henry P. Heiser, N. G. Schmidt and Charles A. Spinney; construction will be started this summer; the power station and repair shop will be built at Marengo, Ill.; the company has a capital stock of \$1,000,000, of which \$25,000 has been issued; bonds have also been authorized to the amount of \$1,000,000; the officers are as follows: E. B. Harang, 1210 Tacoma Building, Chicago, President; E. C. Spinney, 501 Chicago Savings Bank Building, Vice-President; Charles A. Spinney, 1210 Tacoma Building, Chicago, Secretary and Treasurer.

**Vincennes, Ind.**—The Vincennes, Centralia & St. Louis Transit Company has been incorporated to build an electric railway from a point on the east line of the State of Illinois, in Lawrence county, opposite Vincennes, Ind., through the Counties of Richland, Clay, Marion, Clinton, Bond, and to a point in St. Clair or Madison Counties opposite the City of St. Louis, Mo.; general offices of the company are at 705 Isabella Building, Chicago; the incorporators are M. A. Peoples, J. J. Burns, Clyde F. Burns, Dennis O'Connor and J. E. Burns, all of Chicago. Capital stock is \$30,000, but it is to be immediately increased. Burns & Co., 705 Isabella Building, Chicago, are retained in a consulting capacity for this company and will have entire charge of construction and award all contracts.

The Vincennes and Washington Transit Company has commenced construction on its proposed standard-gage railway system, to be 21 miles in length, which will connect Vincennes, Monroe City, Wheatland and Washington. The motive power is to be both steam and electricity; capital stock, \$60,000. J. J. Burns, 705 Isabella Building, Chicago, Ill., is President and Purchasing Agent; M. A. Peoples, Monroe City, Ind., Vice-President and Superintendent; headquarters, 705 Isabella Building, Chicago, Ill.

**Sioux City, Ia.**—F. W. Bisbee, Castana, Ia., states that he is interested in plan to build an electric railway to be known as the Sioux City, Council Bluffs and Omaha Railway, from Sioux City to Council Bluffs and Onawa, Ia., to Dunlap, Ia., a total of 130 miles.

**Paducah, Ky.**—The Kentucky River and Ohio River Interurban Railway Company has awarded the contract for grading its line to Simms Bros., of Thebes, Ill.; contract for 18 bridges has been let to Forbush & Stotler, of Benton, Ill. The Western Engineering and Construction Company, 605 Globe Building, Minneapolis, has the general contract.—John J. Freundlich, Paducah, General Manager.

**Oakland, Md.**—Construction work will be undertaken soon by the Youghiogheny Light and Power Company on its proposed standard-gage electric railway. The road will be about 12 miles in length and it will reach Swallow Falls, Oakland, Mt. Lake Park and Deer Park. The overhead trolley system will be used. The company proposes to operate amusement parks along the line. Capital stock, \$200,000. A. G. Sturgiss, President; Truman West, Vice-President; Bowie John, Secretary; James D. Hamill, Treasurer; H. P. Tasker, Oakland, General Manager; J. B. Hogg, Connellsburg, Pa., Chief Engineer.

**Excelsior Springs, Mo.**—W. A. J. Bell, of Excelsior Springs, Vice-President of the Excelsior Springs and Suburban Railway Com-

pany, informs us that contracts will be let at once for building the proposed line from the Chicago, Milwaukee and St. Paul Railroad depot near Excelsior Springs, to a point in the central portion of Excelsior Springs, a distance of about 1½ miles. Company expects to build its power station and repair shop in this city; capital, authorized and issued, \$50,000; general office, Excelsior Springs. Officers: W. A. Bell, London, Eng., President; W. A. J. Bell, Excelsior Springs, Mo., Vice-President and Purchasing Agent; J. E. Lundstrom, Colorado Springs, Col., Secretary and Treasurer; W. P. Southard, Excelsior Springs, Superintendent and Electrical Engineer; B. Van de Greyn, Excelsior Springs, Chief Engineer. Surveys have been made and capital secured; a franchise has been granted.

**Flushing (L. I.), N. Y.**—Extension of the New York and Queens County Railway from Flushing to Whitestone and to Bayside were authorized by the New York Board of Estimate on June 19. For two years its applications have been pending before the Board. One extension will run from Broadway and Main street, Flushing, to Eleventh avenue and Thirty-sixth street, Whitestone, and the other from Franconia avenue and Twenty-second street, Flushing, to Broadway and Bell avenue, Bayside. F. L. Fuller is President, General Manager and Purchasing Agent, 9 Borden avenue, Long Island City, N. Y.

**Oneonta, N. Y.**—The Oneonta and Mohawk Valley Railroad Company's property has been placed in the hands of a receiver. Joseph K. Choate, General Manager of the company, has been appointed receiver; company operates 80 miles of railroad, connecting Oneonta, Cooperstown, Richfield Springs and Mohawk.

**New York, N. Y.**—The New York Public Service Commission, First District, has adopted a resolution providing for valuation of the property of the street railway companies in Manhattan. The passage of the resolution followed the admission by the receivers of the New York City Railway of the necessity for further abolition of transfers and of the inability to comply with certain orders of the commission for increased service if obligations for rentals on leased lines are to be met.—Oren Root, Manager.

**Wahpeton, N. D.**—F. R. Barnes, Secretary of the Commercial Club, wishes to communicate with parties in regard to a proposition to build an electric railway in Wahpeton, extending 50 miles from Wahpeton to Sisseton, It is reported. It is stated that there is available water power for generating purposes and the community is well settled and prosperous, almost entirely agricultural.

**Dayton, O.**—Council has passed an ordinance to grant to the Cleveland, Cincinnati, Chicago and St. Louis Railway Company the right to construct, maintain and operate a railroad track in and across certain streets.

**South Charleston, O.**—The Springfield and Washington Railway Company (successor to the Washington Traction Company of Springfield, Ohio), will begin construction soon on its extension from South Charleston to Washington Courthouse.—G. W. Baker, President.

**Salem, Ore.**—At a conference of a committee of business men of Stayton and Aumsville, headed by W. L. Freres, a banker of Stayton, and F. W. Waters, representing A. Welch, of Portland, a contract was drawn up and signed, by which the people of Salem, Stayton and Aumsville agree to subscribe \$100,000 in bonds for the building of an electric line from Salem to Stayton, a distance of 18 miles. Welch, who is said to represent Eastern capital, promises to begin building operations within 20 days after the money is raised and to complete the line within a year. The Welch interests already own a franchise in Salem covering over five miles of streets, and construction work will begin upon the project at the same time.

**Woodburn, Ore.**—The Valley Railway Company, recently incorporated, has started construction on its line. Company will build a standard-gage electric railroad from West Woodburn to Woodburn, three miles, and thence through Monitor to Scotts Mills, and on up into the foothills to Wilhoit Springs. A branch will be extended from Monitor to Silverton. Total length, 25 miles. Capital stock, \$100,000.—Frank Robertson, Portland, President; Wm. S. Turner, Vice-President; W. S. Barstow & Co., Portland, Engineers.

**Montreal, Que.**—We are officially advised that the Montreal & Southern Counties Electric Railway Company has opened offices at 605 and 606 Canadian Express Building, McGill street, Montreal. W. B. Powell is Manager; J. A. Burnett is Superintendent and Electrical Engineer. Work is now proceeding on the Montreal-St. Lambert section of this road, and entry into the city of Montreal has been arranged for.

**Pottsville, Pa.**—A trolley road is to be built at once over the summit of the Broad Mountain, eight miles long, which will connect Pottsville with Ashland, Mahanoy City,

Shenandoah, Mt. Carmel and Shamokin; the cost will be \$3,000,000.—Geo. Gerber, President of the Schuylkill Traction Company.

**Memphis, Tenn.**—H. E. Craft, Vice-President of the Lake View Traction Company, Memphis, states that contracts probably will be let within the next thirty days; company proposes to build an electric line from Memphis to Lake View, Tenn., and Clarksdale, Miss., 77 miles; also from Memphis to Collierville, 28 miles; from Memphis to Covington, 33 miles, and 15 miles within city limits of Memphis; surveys are made and right-of-way secured; capital is obtained; R. F. Tate, President; W. W. Hayden, Chief Engineer, Memphis.

**Fort Worth, Tex.**—Capitalists have arranged to build the Fort Worth-Mineral Wells interurban; the line will be 70 miles long; the road was started last Fall and became tied up in the courts.—Address Stuart Harrison.

**Uvalde, Tex.**—A franchise has been granted to M. M. McFarland, of San Antonio, Tex.; J. C. Kirby and John T. Smith, of Austin, Tex., for a street railway, construction to begin within four months; line is to be two miles long and will be operated by gasoline motor cars.

**Seattle, Wash.**—The Seattle, Snohomish and Everett Railway Company has applied to the County Commissioners for a franchise to construct an electric railway from the Seattle city limits and the town of Bothell over the King County roads.—C. W. Kimball, President.

**Wheeling, W. Va.**—The Wheeling Traction Company may extend its line to Moundsville this summer.—H. O. Nagle, Superintendent.

## BRIDGES

**Blackfoot, Idaho.**—The Bingham County Commissioners will build a bridge across the Snake River at Basalt.—Address County Auditor.

**Elkhart, Ind.**—City Engineer Smith has made estimates for repairing bridge across the St. Joseph River.

**Evansville, Ind.**—Council and the County Commissioners have approved plans for bridge to be erected by the Louisville and Nashville Railway.—W. H. Courtney, Chief Engineer, Louisville.

**Joliet, Ill.**—The Board of Supervisors voted to pay one-half of the cost of a new bridge to be built over Horse Creek, in Custer township, and Supervisors Jeffrey of Reed, Deininger of Peotone and Krohnberg of Lockport were named as a committee to supervise for the board the building of the structure.

**Sioux City, Ia.**—On recommendation of the Street Committee the City Engineer has been authorized to prepare plans and specifications and advertise for bids for a bridge over Perry Creek, at Main street.

City Engineer George Y. Skels is preparing preliminary plans for a steel viaduct for the city and the railroads; estimated cost, \$185,000.

**Albion, Mich.**—The city has voted to issue \$30,000 of bonds for rebuilding bridges.

**Laurel, Mont.**—The citizens of Clark Fork have raised \$1,500 towards building a bridge across the Yellowstone, near Laurel.—Address Secretary of Commercial Club.

**Springfield, Mo.**—Plans and estimates will be laid before Council for two bridges over and a rise of 11 feet; that over Main street that over Boonville will be reinforced concrete, over 600 feet wide, with a 30-foot span and a rise of 11 feet; the over Main street will be about the same width, with 25-foot span and 28-inch "I" beams filled with concrete.

**Van Buren, Mo.**—M. T. May is in this city soliciting subscriptions for a new bridge over the Current River at Van Buren.—Address M. T. May.

**Beatrice, Neb.**—The County Board will meet July 10, at which time arrangements will be made to repair county bridges.—Address County Auditor.

**Omaha, Neb.**—City Council has approved plans of Andrew Rosewater, City Engineer, for a steel viaduct to be erected by the C. B. & Q., the Union Pacific and Great Western Railways, over their tracks from 30th and Walnut streets to 26th and Bancroft streets.

**Buffalo, N. Y.**—City Engineer C. M. Morse will prepare plans for a lift bridge at Abbott road; bids will later be called for by Colonel Francis G. Ward, Commissioner of Public Works.

**Cincinnati, O.**—Bridge Engineer Morris has submitted plans for repairing Eighth street viaduct; estimated cost, \$115,000.—Address City Engineer.

**Coshocton, O.**—The County Commissioners are having plans prepared for two large concrete bridges, one to be erected over the Muskingum River and the other over the Tuscarawas River.

**Defiance, O.**—Dennison & Farnsworth, of Cleveland have purchased \$25,000 County bridge bonds at a premium of \$510.75. The bonds bear interest at the rate of 4½ per cent and mature in the year 1912.

**Defiance, O.**—Bonds, \$25,000, have been sold for the construction of bridges; the

proceeds will be used to construct about forty small bridges over ditches, creeks and runs throughout the county; the cost of only a few will surpass \$1,000.—Address Defiance County Auditor.

**Vert Wert, O.**—The plans prepared by J. S. Miller, County Surveyor, for the construction of a bridge over the canal at Third street have been approved. The structure will be a steel swing bridge with a driveway and separate walks.

**Guthrie, Okla.**—The County Commissioners of Logan and Payne Counties recently decided to construct jointly a steel bridge across the Cimarron at a probable cost of \$75,000.—Address Logan County Auditor.

**Pendleton, Ore.**—Council will build bridge across High street gulch.

**Altoona, Pa.**—The citizens will vote on the question of issuing bonds to pay the city's share of the cost of building bridge over the railroad at Seventh street.

**Bradford, Pa.**—Bonds, \$10,000, will probably be issued for constructing a bridge across the creek at Mill street.

**Monongahela, Pa.**—The plans prepared by Engineer E. K. Morse, Washington, for the new bridge at Monongahela will be ready in a week to advertise for bids; it will be built in three spans; an estimated cost is \$300,000, to be borne jointly by Washington and Allegheny Counties.

**Pittsburg, Pa.**—Councilman Erwin Rothpletz, of the North Side, has introduced in Councils an ordinance for an issue of \$1,000,000 bonds to build a free bridge across the Allegheny River, beginning at Ohio street and ending at Eleventh and Liberty streets.

**Reading, Pa.**—The Berks County Commissioners will construct a concrete bridge across the Ironstone Creek, near Gresham.—Address Berks County Auditor.

**Washington, Pa.**—The Washington County Commissioners have been informed that the plans for the new bridge over the Monongahela River at Monongahela have been completed; the bridge is to be built in three spans, leaving a wide boat passage in the center; the cost, estimated at \$300,000, is to be borne jointly by Washington and Allegheny Counties.

**Chattanooga, Tenn.**—Mayor Crabtree has approved an ordinance requiring the Southern Railway to build and maintain new bridges over its tracks at the intersection of same, also at Vine and East Fifth streets.

**Memphis, Tenn.**—An ordinance is before Council for expending \$4,000,000 by the city and seven railroad companies in subways and viaducts. James H. Malone, Mayor.

**Brazos, Tex.**—County Judge E. B. Ritchie, Palo Pinto, may be addressed for information relative to rebuilding of bridge across Brazos River.

**Dallas, Tex.**—County Engineer Jack Wett recommends an appropriation of \$15,000 for repairing county bridge.

**El Paso, Tex.**—Two bridges across the Rio Grande north of El Paso are assured; as the County Commissioners have agreed to build both bridges on condition that the residents of Canutillo and Courchesne, on the west side, build roads and abutments to the bridges in question; the Commissioners met with J. W. Eubank, who gave an estimate of the cost of the bridges at \$5,000.—Address County Auditor.

**Granville, Vt.**—H. W. King, of Cleveland, O., has offered to give the town of Granville a new steel bridge to span the White River; the town has accepted the offer; the structure will be 69 feet long and 14 feet wide, and the piers will be of gray granite; the estimated cost of the bridge and foundations is \$4,000.—Address Town Clerk.

**Ft. Atkinson, Wis.**—An election will be held to decide the question of issuing \$25,000 bonds for constructing a bridge across the Rock River.—Address City Clerk.

## MISCELLANEOUS

**Anniston, Ala.**—An ordinance is before Council to authorize an issue of \$12,000 improvement bonds.

**San Francisco, Cal.**—There is likely to be some delay in the matter of the garbage disposal system, the funds for a preliminary investigation regarding the most satisfactory method of disposal not being yet available.

**San Francisco, Cal.**—According to a statement issued by the Public Utilities Committee of the Board of Supervisors, the \$7,000,000 bond issue authorized by the election, May 11, will be placed on sale by August 1, unless some unforeseen delay interferes with the work.

**San Jose, Cal.**—The question of a new crematory is being discussed; it has been proposed to erect a new \$75,000 plant.

**Atlanta, Ga.**—Councilman Huddleston has introduced a resolution providing for \$100,000 for two or more crematories.

**Milltown, Ga.**—A gasoline engine is wanted for the water works.—J. V. Talley, Mayor.

**Chicago, Ill.**—Property at Buena and Kenmore avenues have been donated to the city for a new park.

**White Hall, Ill.**—A new public park is to be established; Mrs. S. Griswold has donated necessary land.

**Davenport, Ia.**—The question of a new public park on the river front, between Harrison and Gaines streets, is being discussed.—Address Alderman Mass or Schnaack.

**Harper, Kan.**—A new park is planned; Mrs. Fannie Shriner has donated necessary property.

**Leavenworth, Kan.**—Dr. C. R. Carpenter, City Physician, advocates the erection of a new crematory plant; it has been proposed to expend from \$20,000 to \$25,000 for this purpose.

**St. Paul, Minn.**—Old Center block and old City Hall site are to be secured by the Park Board of Council for park purposes.

**Lincoln, Neb.**—The question of a new garbage crematory is being discussed.—Address Health Officer W. C. Rhode.

**Carlsbad, N. M.**—Bonds, \$52,000, have been voted for city improvements.—Address City Clerk.

**Orange, N. J.**—Petitions asking for an election on the use of the voting machine were received by Council from both districts of the Fifth Ward and from the first and second of the Third Ward, and August 11 was fixed as the time for holding such an election in three districts of the First Ward and the third district of the Third Ward. It is the intention to hold the election for the districts petitioned for last night on the same date.

**Rochester, N. Y.**—Plans are under discussion for a large park at Cobb's Hill.—Address City Engineer Fisher.

**Bucyrus, O.**—Bids will be received by the County Commissioners for the constructing of a concrete and stone wall in the Village of Crestline; the length of the wall will be 150 feet; height, from 16 feet to 6 feet.

**Canton, O.**—Engineer Starrett is figuring on the erection of two bid arches to carry off the overflow water at the Belden avenue bridge in the Berger shop district; these brick arches, each with the span of 10 feet, will be under the road and against the bridge, according to the Engineer's plan.

**Beaver Falls, Pa.**—The Borough has practically decided to build a garbage crematory.

**Bradford, Pa.**—In joint session the Street Committee reported favorably on bonding the city for \$3,500 for the erection of a building for the storage of the Street Department's wagons and other equipment; \$7,000 for the repaving of Webster street; \$10,000 for the construction of a bridge across the creek at Mill street, and \$5,000 for the establishment of a sewer fund. Favorable action was taken after a long series of speeches on each item. An effort made to include \$8,000 for a new bridge on Main street was voted down.

**Greenville, Pa.**—The committee appointed for park improvement is securing estimates for fountains, etc., and the prospects are that the parks will have much attention.

**Pittsburg, Pa.**—Bond ordinances have been introduced in Council calling for an issue of \$6,615,000, to be voted on by the people. The bills introduced by individual Councilmen will probably be pigeonholed in the Finance Committee until after the Summer vacation, when Mayor Guthrie will recommend to Councils what improvements the administration favors. The ordinances provide \$1,975,000 for the purchase of the South Side water plant; \$700,000 for extension of the water mains; \$1,000,000 for a new market on the North Side; \$1,200,000 for a new reservoir on the North Side; \$175,000 for rebuilding the Lorimer avenue bridge; \$65,000 for the Ross street bridge, and \$1,000,000 for a new bridge on the site of the old Union bridge at the point.

**Chattanooga, Tenn.**—Mayor Crabtree is in favor of new parks for the city.

**Memphis, Tenn.**—Nearly \$5,000,000 will be expended jointly by the city of Memphis and the seven railroad companies which occupy trackage rights on Railroad avenue, in the event that Mayor James H. Malone's "subway ordinance" is passed by the Council on its second and final reading. The ordinance provides for nine subways, one viaduct and the changing of the railroad grades on Railroad avenue, between Kentucky street on the west and Porter street on the east, and also a general change of railroad grades in the area between Iowa avenue on the north and Calhoun avenue on the south.

**Manchester, Va.**—The Crematory Committee of Council has decided to recommend the erection of a new crematory to cost \$18,000.

**Richmond, Va.**—The question of securing 262 acres outside of the city limits for the building of a new public park is being promoted by Councilman Gary.

An election is to be held soon for the purpose of voting \$30,000 bonds for improving and enlarging Highland Park.

**Hundred, W. Va.**—Prices are wanted on engines; also on 6-inch and smaller-sized pipe, and pumps for water works.—J. M. Burdine, Mayor.

**Milwaukee, Wis.**—A site has been offered for the new children's playground proposed by the city.—Address the Park Board.

## BIDS RECEIVED

**Fort Mason, Cal.**—The P. J. Carlin Construction Company of New York has been awarded a contract at \$1,055,000 for the construction complete, including sea wall, necessary dredging and filling, of the new army supply depot at Fort Mason, Cal. This depot will serve as a base of supplies on the Pacific Coast and the Philippines.

**Oakland, Cal.**—The Contra Costa Construction Company was low bidder for constructing sewers, at \$18,517.90, other bidders being as follows: C. D. Vincent, \$23,987.35; Cotton Brothers, \$26,987.65; Stanley Contracting Company, \$21,242.70; San Francisco Bridge Company, \$27,789; Latus & Layaz, \$29,609.70. The details of the low bid follow: 1,186 feet 4x6 feet concrete sewer, 13 1/2, 9-inch shell, in trench 9 to 11 feet deep, soft clay excavation and ground water to be handled, including 500 feet macadam paving to be excavated and relaid, and including caps and floor, at \$10.72 per linear foot; 370 feet 3x3 1/2 feet concrete 8-inch shell, 8-foot trench, sand excavation and some ground water to be handled, macadam paving to be excavated and relaid, at \$5.56 per linear foot; 380 feet 2 feet 2 inches by 3 feet 3 inches sewer, 8-inch shell in 7-foot trench, sand excavation and some ground water to be handled, macadam paving to be excavated and relaid, at \$3.96; 150 piles 20 feet long, \$5.87; 60 22-foot piles, \$6.12; 30 24-foot piles, \$6.45; 30 26-foot piles, \$6.73; 30 28-foot piles, \$7.02; 30 30-foot piles, \$7.30; manholes, 7 to 10 feet, \$45; no allowance for rock excavation or sheathing left in trench; removing and replacing paving included in sewer price; wages of common labor, \$2.25 per day, 8 hours, and much to be had at \$2 per day.

**San Francisco, Cal.**—The Board of Public Works awarded the contract to the Healy-Tibbits Construction Company, 268 Market street, for constructing a reinforced-concrete sewer in Commercial street, between Drumm and Sansome streets, at about \$26,779, and in California and Sacramento streets, between Drumm and Davis streets, at \$9,958.

O. I. McHugh has been awarded the contract at \$11,649 for the construction of a sewer in Fulton street, between Thirty-seventh and Forty-seventh streets.—Marsden Manson, City Engineer.

**Bridgeport, Conn.**—Following is a list of successful bidders for furnishing paving materials: Furnishing about 4,975 square yards brick for \$31.26 per M. f. o. b. Bridgeport, five-year guarantee, about 43 to yard; awarded to Mack Manufacturing Company, Philadelphia, Pa.

Furnishing about 885 square yards wood block paving for \$37.04 per M. f. o. b. Bridgeport, five-year guarantee, about 54 to square yard; awarded to United States Wood Preserving Company, New York City.

Furnishing about 930 barrels of Portland cement, in paper \$1.25 per barrel, 380 pounds, in cloth \$1.55 per barrel; awarded to Silliman & Godfrey Company, city, "Lehigh Cement."

Furnishing about 1,400 tons "net" of crushed stone, "granite," f. o. b. Bridgeport; awarded to Silliman & Godfrey Company, 90 cents per ton "net."—Wm. S. McKenna, City Engineer.

**East Hartford, Conn.**—The Board of Sewer Commissioners has awarded the contract for the construction of 2,400 feet of 8-inch and 800 feet of 10-inch pipe sewer in Burnside avenue and Larabee and Belden streets, to A. E. Douglass, of Glastonbury, Conn.—Edward E. King, President Board; C. H. Olmsted, Engineer.

**Litchfield, Conn.**—The contract for the construction of 19,000 linear feet of sewer in the borough has been awarded to the Pierson Engineering and Construction Company, Bristol, Conn., at \$16,119. The contract calls for 2,200 feet of iron pipe, the balance tile pipe; also 100 house connections, manholes, catch basins, etc.

**Washington, D. C.**—The Washington Asphalt Block and Tile Company has been awarded the contract at \$9,000 for paving South Carolina avenue with asphalt block.

The Commissioners have awarded to E. G. Gummel, 300 Rhode Island avenue, N. W., Washington, the contract for grading Massachusetts avenue, extended, at 28 cents per cubic yard, and filling in Monroe street, at 33 cents.

Bids were received as follows for constructing a sewer in Delafield street, near Iowa avenue: (a) R. J. Beall Construction Company, (b) E. G. Gummel, (c) James A. Coyle; ordinary excavation, (a) 65 cents, (b) 90 cents, (c) 80 cents; brick masonry, (a) \$15, (b) \$15, (c) \$16; 12-inch sewer pipe, 70 cents (each bidder); 10-inch sewer pipe, (a) 65 cents, (b) 70 cents, (c) 65 cents.

The War Department has contracted with the Carroll Electric Company for a primary and secondary cable at Washington barracks at a cost of \$9,218, and with Lyons Bros., city, for installing a bowling alley at Fort Washington, Md., at a cost of \$5,606.

Bids were received as follows on June 19 at the office of the Commissioners of the District of Columbia for furnishing sewer brick for the ensuing fiscal year: New Washington Brick Company, Washington, \$8.63 per M. at bidder's works, Alexandria County, Va.; John Miller, Washington, D. C., \$8.50 at District property yards, \$7.95 at works, Alexandria County; 50 cents less per M for cheaper quality; Frederick Brick Works, Frederick, Md., \$8.50 at District property yard, \$7 at works, Frederick.

**Freeport, Ill.**—The Board of Local Improvements has let contract to M. Ford, at \$42,862.50 for the construction of a 24-inch sewer.—G. W. Graham, City Engineer.

**Lincoln, Ill.**—The Board of Local Improvements has awarded to George A. Peter, of Elgin, the contract for paving Delafield street at \$10,723.

**Manito, Ill.**—George H. Glass & Co., of Pekin, has secured the contract for the electric light plant at \$3,075.

**Gas City, Ind.**—The contract for the construction of a sewer here was awarded on June 16 by Council to the Gas City Construction Company at \$15,261.52, which is slightly less than the estimated cost.

**Hartford City, Ind.**—Modlin Bros. have been awarded the contract by the county at \$6,450, for constructing the Hudson gravel road.

**Peru, Ind.**—Sidney A. Vaugh and James Wilbun have been awarded contracts for constructing twenty-three miles of gravel road.

**Terre Haute, Ind.**—The contracts for the following bridges were awarded June 13: Watts bridge, 35-foot span, concrete arch bridge, to Joseph L. Lowe, Riley, Ind., \$1,044; Hazleberger bridge, two 45-foot spans, concrete and steel construction, to Fred C. Harper, city, \$3,496; a concrete arch bridge between Riley and Lost Creek Townships over Honey Creek, to Joseph Lowe, \$665.

A contract was awarded on June 8 to Harry A. Carpenter, of Cloverland, Ind., for a stone-paved road, on the county line between Vigo and Clay Counties, for \$8,490.—Nathan G. Wallace, Auditor of Vigo County.

**Fort Leavenworth, Kan.**—James Staunton has been awarded the contract, at \$16,800, for grading Grant avenue.

**Yarmouthville, Me.**—Fales & Simmons have been awarded the contract for constructing 2,100 feet of sewer on Main and Center streets.

**Baltimore, Md.**—The Raymond Concrete Pile Company of New York and Chicago has received the contract for the concrete work in the construction of four reinforced concrete bulkhead docks, of an aggregate length of 2 1/2 miles, for the city of Baltimore. These are the first docks of this type to be built in this country. The contract price of the work will be in the neighborhood of \$500,000. Work will be begun July 1 and is to be completed in about two years. The Sanford & Brooks Company of Baltimore is the general contractor.

The following bids were received by the Board of Awards for the construction of a 225,000,000-gallon reservoir and diversion sewer in connection therewith for the Baltimore City Water Department: (a) reservoir, (b) sewer, (c) totals. Lane Bros. Co. & Jones, 811 Fidelity Building, Baltimore, (a) \$49,810.20 (awarded contract), (b) \$44,524, (c) \$539,334; Fisher-Riley & Carozza, Baltimore, (a) \$530,470; C. B. Clark & Co., 10 East Lexington street, Baltimore, (b) \$33,572 (awarded contract); Eyre-Shoemaker, Inc., Arcade Building, Philadelphia, (a) \$589,414, (b) \$49,129, (c) \$638,544; David Peoples, Betz Building, Philadelphia, (a) \$590,376, (b) \$48,165, (c) \$638,541; Fidelity Construction Company, Detroit, Mich., (a) \$650,825; Reilly & Riddle, Lancaster, Pa., (b) \$40,461; Stewart-Kerbaugh-Shanley Company, 527 Fifth avenue, New York, (a) \$654,109, (b) \$45,081, (c) \$699,190; Robert C. Storrie, Fort Worth, Tex., (a) \$663,236, (b) \$49,177, (c) \$712,413; Cranford Paving Company, Washington, D. C., (a) \$760,450, (b) \$54,104, (c) \$814,554; William B. Munroe, Boston, Mass., (a) \$74,860, (b) \$60,130, (c) \$834,810; United Engineering and Contracting Company, 32 East Thirty-third street, New York, (a) \$837,241, (b) \$73,563, (c) \$910,804; Albert Weber, Baltimore, \$40,923; Falvey & Kelly, Boston, Mass., \$50,243; Metropolitan Contracting Company, Baltimore, \$73,986.

The Board of Awards has decided to reaffirm its position and to stand by the recommendation of the Commissioners for the opening of streets, as a result of which the contract for the paving of North avenue from Payson street to Twelfth street was granted to Warren Bros. The Board decided against William M. Elder, who, through his attorney, William H. Thomas, claimed that his bid was lower than that of Warren Bros., and that he was entitled to the contract. The dispute was over the tabulation of the bids, but the Board, after going over the original specifications, decided that no error had been made.

The Board awarded the contract for re-

pairing Lexington Market to P. J. Cushing, whose total bid for the three stretches of the market—\$4,900—was the lowest.

E. B. Clark & Co. was awarded the contract for the diversion reservoir, near Forest Park, at \$33,512, the work to be completed in 200 days.

The William G. Hopps Grain and Hay Company was awarded the contract to furnish the Fire Department with feed for one month. F. J. Farley's bid of \$3,175 to erect an addition to the Quarantine Hospital was accepted.

**Boston, Mass.**—Glenn & Broderich, Old South Building, city, were low bidders for constructing Section 86, 42-inch concrete sewer and 12-inch pipe sewers, extension of high level sewer, South Metropolitan system, Brighton, bids for which were opened by the Metropolitan Water and Sewerage Board on June 19, as follows: Glenn & Broderich, \$8,913.60; Charles J. Jacobs Company, Roxbury, \$9,766.50; James H. Ferguson, Dorchester, \$10,543.80; James Driscoll & Son, Brookline, \$11,214.50; A. M. Cusack, 95 Milk street, \$11,491; McCarthy & Walsh, East Boston, \$12,459.50; Mark H. Lynch, Roxbury, \$12,725; Coughlan & Shiels Company, 104 Hanover street, \$12,862.50; George M. Bryne Company, 7 Water street, \$13,254; Falvey & Kelly, Dorchester, \$13,707.50; Donovan & Phillips, 15 Beacon street, \$14,181; Bruno & Pettit, 18 Tremont street, \$14,784; Rowe Contracting Company, Melrose, \$20,170.

The details of the low bid follow: 710 linear feet earth excavation and refilling in trench, 42-inch concrete sewer, at \$4.25; 60 cubic yards brick masonry, Portland, in manholes, at \$14; 550 cubic yards concrete masonry, Portland, in trench, at \$4.75; 1,640 linear feet earth excavation and refilling in trench, 12-inch vitrified pipe sewer, at \$1.49; rock excavation, as found, \$4.

**New Bedford, Mass.**—The Fire Committee received a formal proposal from S. T. Davis, President of the Locomobile Company of America, Bridgeport, Conn., to supply for the New Bedford Fire Department for \$6,000 a combined automobile chemical and hose cart. This vehicle consists of a standard 40 horse-power Locomobile chassis equipped with a special body containing compartments for steamer hose; also chemical tank and other fire fighting apparatus.

**Springfield, Mass.**—In a list of sixteen bidders on the contract for the construction of the Provin Mountain reservoir, the Ficken-Baker Construction Company of New York submitted the lowest bid to the Water Commissioners, and received the contract. The firm's bid was \$137,855, several thousand dollars less than the original estimate of the Water Commissioners on the job, and about \$2,000 below the next lowest bidder. The detailed estimate of the successful bidders on the contract is as follows: Roadway, \$4,440; earth excavation, \$5,950; rock excavation, \$22,950; rolled embankment, \$2,610; crusher run, \$1,800; rock fill, \$6,720; earth fill, \$4,680; concrete masonry for filling, \$2,250; concrete for piers and vaulting, \$28,875; concrete for walls, \$26,100; all other concrete masonry, \$19,980; steel reinforcing, \$3,300; inlet and outlet gatehouses, \$2,600; dwelling, \$4,100; appurtenances, \$1,500; total, \$137,855.

Other bidders, in the order of the amount of their bids, were as follows: Sperry & Sellers Company, New Haven, \$133,830; Coughlin-Shields Company, Boston, \$144,955; Coleman Bros., Boston, \$147,400; New York Continental Well Filtration Company, New York, \$147,825; J. E. Bunting, New York, \$148,990; Manufacturers' Construction Company, Wilmington, Del., \$154,595; T. Stewart & Son, Boston, \$156,850; Loring W. Farnham Company, Boston, \$162,105; Bruno & Pettit, Boston, \$168,700; Falvey & Kelly, Salem, \$171,750; F. T. Ley & Co., \$174,340; W. W. Lindsay & Co., Philadelphia, \$174,810; Long & Little Company, Leominster, \$179,625; Merrill Gabel-Frazer Company, New York, \$187,465; Leahy Construction Company, New York, \$219,725.

**Detroit, Mich.**—The Department of Public Works has awarded contract to T. E. Currie, 17 and 18 Peninsular Savings Bank Building, for paving six streets with brick, amounting to \$45,382.04.

**Grand Ledge, Mich.**—Charles Pickens, city, was awarded the contract, at \$1,750, for construction of Scott street sewer, and J. H. Holgate, Lansing, contract for the W. Jefferson street sewer, at \$1,975.

**River Rouge, Mich.**—Council has awarded contract to F. D. Porath, 878 Twenty-fifth street, Detroit, for 18 miles of sewers.

**Virginia, Minn.**—C. C. Butler, city, secured the contract for the construction of a sanitary sewer in District No. 3E.—Albert E. Bickford, City Clerk; E. F. Johnson, City Engineer.

**Jackson, Miss.**—The Capitol Commission has let the contract for the authorized improvements to the executive mansions and grounds. The main building contract was awarded to John F. Barnes & Co., of Jackson, at \$17,920, the concrete walks and gen-

eral concrete work to John F. Houchin, the grading to D. O. Bowles & Co., the plumbing to the Jackson Plumbing Company, all contractors being local men.

**St. Louis, Mo.**—A. J. O'Reilly, President of the Board of Public Improvements, let general contract to the McCully Construction Company for a two-story engine house for the Fire Department; cost, \$20,000.

**Seward, Neb.**—Contracts for furnishing material and equipment for the addition to the municipal electric light system have been awarded to Filer & Stowell Company of Milwaukee, Wis., and the Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa.—J. Martz is Engineer.

**Carson City, Nev.**—The contract for 5,000 linear feet Mathewson lock-joint pipe was awarded June 6 to Crane & Co., San Francisco and Chicago, at 78½ cents per foot.

**Camden, N. J.**—Council's Water Committee received two propositions for increasing its water capacity 5,000,000 gallons or more daily. The first was from the R. M. Dunn Company, of Philadelphia, Pa., which agrees to install a slow sand filtration plant, drawing the water from Pensauken Creek at the rate of 3.6 cents per 1,000 gallons if 5,000,000 or less are used, 2.8 cents per 1,000 gallons if 8,000,000 are used, and 2.3 cents per 1,000 gallons if over 8,000,000 gallons are used daily. There is a sliding scale for the purchase of the plant. In ten years it can be secured for \$450,000; fifteen years, for \$400,000; twenty years, \$350,000; twenty-five years, \$300,000; thirty years, \$250,000. At the expiration of thirty-five years it becomes the property of the city.

The T. A. Gillespie Company, of New York, submitted a proposition to erect a plant for \$750,000, the water to be drawn from Timber Creek, below Clementon. The bids were laid over for consideration.

**Jersey City, N. J.**—Two bids were received June 18 for repairing Hudson County boulevard, but as they exceeded the estimated cost they will probably be rejected; the advertisement for repairs to surface of roadway called for bituminous concrete or asphalt mixture, top dressing, based on estimate of 1,000 yards square. Specification No. 1 called for No. 2 crushed stone on top of present macadam surface, top dressed with bituminous concrete or asphalt mixture to a depth of 2 inches. Specification No. 2 called for excavation of gravel centre (where gravel has been used instead of macadam) and the substitution of crushed stone to a depth of 4 inches, top dressed with 2 inches of bituminous concrete or asphalt mixture. Only two bids were received: Uvalde Asphalt Paving Company: Specification No. 1, \$1.80 per square yard; Specification No. 2, \$2.05 per square yard. Barber Asphalt Paving Company, Newark, N. J.; Specification No. 1, \$1.85 per square yard; Specification No. 2, \$2.23 per square yard.—J. C. Sweeney, Clerk Boulevard Commissioners.

**Merchantville, N. J.**—Council has awarded the contract for the completion of the sewerage system and a disposal plant to B. T. Sweeten & Co., of Camden, N. J., at \$37,000.—A. W. MacCallum, Chairman of Council.

**Binghamton, N. Y.**—The Board of Contract and Supply has awarded contract for the Conklin avenue sewer, from New to High street, to John Shultz, at his bid of \$4,365.38, and from De Russey to New street, to A. L. Willey, at \$1,467.76.

**Buffalo, N. Y.**—Bids were opened on June 13 by Francis G. Ward, Commissioner of Public Works, for cast-iron pipe and special castings and for hydrants. The lowest bids were submitted by the United States Cast-Iron Pipe and Foundry Company, 71 Broadway, New York, for cast-iron pipe at \$23.50 per ton and 2½ to 3 cents per pound for castings, and the Howard Iron Works for hydrants.

**Clayton, N. Y.**—The Board of Supervisors has awarded contract to the Canton Bridge Company, Canton, O., to furnish plans and erect a steel bridge over French Creek, at Clayton; cost, \$18,000.

**Green Island, N. Y.**—E. Kelly has been awarded contract for 1,070 square yards 4-inch brick on 6-inch concrete, Portland, 1:4:8, at \$2.54, including excavating 360 cubic yards, total \$2,717.80; also for setting 655 linear feet 6-inch concrete base and backing and granite curb, 6x12 inches, at 78 cents, total, \$510.90, and for 1,650 square feet 3-inch bluestone sidewalk on 4-inch paved foundation, at 30 cents, total \$495. J. H. Gleason bid \$2.55, or a total of \$2,728.50 for the paving, and Mulderry Brothers, \$2.58, or \$2,760.60; Gleason, 80 cents, or \$524 for the curbing, and Mulderry Brothers, \$1, or \$655, and Gleason, 32 cents, or a total of \$522.50 for sidewalks, and Mulderry Brothers, 29 cents, or \$481.25.—E. R. Cary, Village Engineer.

**Herkimer, N. Y.**—The President of the Village has been authorized to sign a contract with Warren Bros. Company for paving with bitulithic pavement, according to specifications as prepared by the Village Engineer, the following streets: Prospect, from the New York Central Railroad to Seman-

street; South Main, from Smith street to the Utica and Mohawk Valley Railroad; North Main street, from the New York Central Railroad to German street; Park avenue, from Main street to Myers Park; Church street, between Main and Prospect; South Washington street, from the New York Central Railroad to the Utica and Mohawk Valley Railroad, and Mohawk street, from North Main to Caroline street, the price being \$2.28 on a 4-inch and \$2.48 on a 6-inch foundation. By the action of the board paving work amounting to over \$90,000 will be done this year. Proposals were received for asphalt, brick and Hassam, as well as bitulithic.

**Mt. Kisco, N. Y.**—Bids were opened by the Town Board of Bedford in the office of Joseph E. Merriam, Town Clerk, at Mt. Kisco, for grading and improving a road a distance of about 3 1-3 miles, leading from the Cross River bridge to the Lewis Borough town line. The contract was awarded to James Garafano, 39 South Third avenue, Mt. Vernon.—Byrne & Darling, Engineers-in-Charge, White Plains.

**Port Chester, N. Y.**—The Board of Trustees on June 17 awarded the contract to the Terralithic Company for the post road improvement, at \$15,605.

**Rochester, N. Y.**—The Board of Contract and Supply has awarded contract for remodeling the Police Headquarters Building to Fred Gleason at \$19,974. The contract for the Hawley street pavement was let to F. C. Lauer & Sons' Company at \$24,162. Other contracts were let as follows: Florence street walks, Ripton & Murphy, \$198.75; Huntington street asphalt pavement, Whitmore, Rauber & Vicinus, \$6,064.

The contract was not awarded for Hawley street pavement. The low bidders were F. C. Lauer & Sons Company, \$1.85 for Shawmut brick and Reynoldsburg wire cut, and the same prices were made by F. V. Brotsch & Company. The only bid for the superstructure of the Brighton sewage pumping station was presented by Frederick Gleason. His bid was \$1,785 and ninety days was the time named for the work.

**Rome, N. Y.**—Bids were opened by the Water and Sewer Board for the pipe for the new line from Fish Creek as follows: Charles Millar & Sons' Company, Utica: For the 27-inch line, \$27 per ton; 20, 24, 30 inch line, \$22.60 per ton; specials, 2½ cents per pound.

Warren Foundry and Manufacturing Company, of New York: 27-inch line, \$24.50 per ton; 30-inch line, \$23.50 per ton; specials, 3 cents per pound.

Camden Iron Works, of Camden, N. J.: 27-inch line, \$24.60 per ton; 30-inch line, \$23.70 per ton; specials, 2½ cents per pound.

United States Cast Iron Pipe and Foundry Company of New York: 27-inch line, Class A, \$26.75; Class B, \$26; Class C, \$25; 30-inch line, from \$24.40 to \$24.75.

Of the 30-inch line, which is recommended by the Engineers, there are to be 4,316 tons, and of the proposed 27-inch line, 3,745 tons. As a quorum of the Board was not present an adjournment was taken till 8 p. m.

The contract was awarded to Charles Millar & Sons Company, of Utica, the contract being for the 30-inch pipe, the contract price amounting to \$97,541, exclusive of specials. A year ago the pipe for the 16-inch main in East Rome cost \$34.20 a ton. The line of pipe is from the Stokes reservoir to Rome. The pipe is to be delivered between July 1 and April 1.

**Troy, N. Y.**—The Contract and Supply Board has awarded the contract for repairs to the asphalt pavements upon which the guarantee has expired to the North Hudson Contracting Company at prices ranging from \$2.30 to \$2.60 per square yard. The streets to be repaired are Fifth, Sixth and Maple avenues, State, Union, Rensselaer and Seventh streets.

**Velva, N. D.**—Oscar Claussen, Consulting Engineer, St. Paul, Minn., has awarded the contract for the construction of the water works system to C. H. Porritt, Fargo, N. D., at \$25,000.—J. E. Henkle, City Auditor.

**Wahpeton, N. D.**—The following bids were opened by the Commissioner of Indian Affairs, Washington, D. C., for constructing a water system at the Wahpeton Indian School: J. J. Richter, Wahpeton, \$8,696, time, Nov. 1, 1908; Des Moines Bridge and Iron Company, Des Moines, Iowa, \$8,188, time, Nov. 1, 1908; W. D. Lovell, Minneapolis, Minn., \$8,400, time, six months; Frank A. Hammock, Morris, Minn., \$8,978.

**Columbus, O.**—The Board of Public Service, E. W. Hirsch, Secretary, awarded the following street improvement contracts: Felton street, S. T. Knight, 36 South Garfield street, \$8,000; Fifth street, N. B. Abbott, 85 North High street, \$2,000; Gates street, J. C. Beasley, 649 South Twenty-second street, \$9,000; McKinley street, W. C. Pugh, Union National Bank Building, \$7,000; Winner avenue, S. T. Knight, \$3,000; Frambes avenue, W. H. Luchtenberg & Co., Wyandotte Building, \$7,000; Woodruff avenue, W. H. Luchtenberg & Co., \$5,000; State

street, J. C. Beasley, \$15,000; Dublin avenue, D. E. Sullivan & Sons, Columbus Savings and Trust Building, \$22,000; Beck street, from Third to Ninth street, N. B. Abbott, 85 North High street, \$16,000; Cherry street, from High street to Second avenue, C. H. Walcutt, 333 South Harris avenue, \$5,000; Felton street, from St. Clair to Galloway avenue, \$8,000; Gates avenue, J. C. Beasley, 649 South Twenty-second street, \$9,000; Goodale street, M. J. Burns, 40 Board of Trade Building, \$5,000; McKinley avenue, W. C. Wooley, \$3,000; Monroe avenue, A. G. Pugh, 405 Union National Bank Building, \$7,000; Woodland street, from Broad to Atcheson street, Baldwin Bros., \$7,000; Yale street, from State to Sullivant street, J. C. Beasley, \$15,000.

**Conneaut, O.**—Roy L. Williams, Kalama-zoo, Mich., has been awarded four contracts for pavements to be laid this summer at Conneaut; the contract prices are as follows: West Main street, \$31,287.50; East Main street, \$1,114.60; Liberty street, \$7,884, and Jackson street, \$4,921; local brick will be used.

**Franklin, O.**—Council in special session awarded the Main street paving contract to the J. E. Conley Company of Dayton, at its bid of \$21,600; the company agrees to begin the work soon after July 4, and to have the job completed within two months.

**Mt. Gilead, O.**—The W. H. Ramond Company, of Galion, O., has secured two large contracts for paving in Mt. Gilead.

**Marion, O.**—A. J. Grady has the contract for paving Hill street with Townsend block and Murphy filler at \$3,400.

**Middletown, O.**—J. E. Conley Company, of Dayton, has a contract for paving Main street, in the village of Franklin, at \$21,600.

**Newark, O.**—The Board of Public Service opened bids for the extension of the water system in the city, which will be paid for with the \$85,000 recently appropriated by Council. There are 16 miles of pipe and equipment necessary for the extension. James B. Clough seems to be low on pipe and Rensselaer of Chicago on hydrants and gate valves. T. C. Brooks, of Jackson, Mich., and American Light and Water Company, of Kansas City, are close bidders, but it looks like Brooks will get it, the prediction being by Engineer Wells.

**Paulding, O.**—The contract for the steel bridges has been awarded to the Oregonia Bridge Company: 50 feet, \$614; 50 feet, \$614; 65 feet, \$890; 90 feet, \$1,340. Contract for canal bridges awarded to the Capitol Construction Company, Columbus, O., at \$1,600 each. Contract for concrete abutments and bridges awarded to M. O'Brien, Lima, O.; Smith, Jacobs & Co., Antwerp; Schneider Construction Company, Defiance, O.; William Russell, city; Graham & Ludwig, Payne; Hallcock & Sunday, Antwerp; W. E. Basore, city; Clemmer & Johnson, Hicksville; H. S. Robison, Oakwood; prices ranging from \$5.90 to \$12 per cubic yard.—Floyd Atwill, County Auditor.

**Port Clinton, O.**—Frank Richardson has a contract for paving Fourth street, his bid being approximately \$30,000.

**Portland, Ore.**—The City Water Board has awarded to Caldwell Bros. of Seattle, Wash., contract for water valves at \$3,410.

**Easton, Pa.**—The following bids were received for building of the two fire stations on the South Side, City of Easton: John W. Bonden, \$7,261.90 each; William J. Kressler, \$7,439 each; John H. Goodyear, \$7,414 each; Samuel Gelter, \$7,143 each; J. L. Wickheiser, \$6,888.50; Andrew Weiss, \$6,425; Steinmetz & Walter, \$7,450; Asa P. Smith, \$7,350. Contract awarded to Andrew Weiss.—John Mutchler, City Clerk.

**Erie, Pa.**—The contract for paving Front street, Peach to Sassafras, with stone was awarded to J. and M. Doyle, the only firm to submit a bid, at 75 cents a yard, the city to furnish the stone.

The contract for constructing a nine-inch sewer in Nineteenth street, Poplar west 230 feet, has been awarded to Dennis O'Brien on a bid of 55 cents a foot for nine-inch pipe, 30 cents for six-inch pipe, 70 cents for Y or T branch pipe and \$30 for manholes. J. and M. E. Doyle bid 70 cents; D. Jones, 67 cents; Ed Driscoll, 60 cents. The contract for a similar sewer in Twenty-second street, Poplar east, 660 feet, also went to Dennis O'Brien on a bid of 58 cents a foot for nine-inch pipe, 30 cents for six-inch pipe, 75 cents for Y or T branch pipe and \$37 for manholes. Ed Driscoll bid 75 cents; J. McCormack & Sons, 69 cents; J. and M. E. Doyle, 65 cents; D. Jones, 67 cents.

**Ligonier, Pa.**—The Borough Council has awarded contract for curbing Market street and around Diamond Park to John Herrmann, of Latrobe, and decided by a vote of four to three to use stone and not cement curb, the price for each being 55 cents per linear foot.

**Mercer, Pa.**—Council has awarded a contract for a lateral sewer on North Pitt street to M. Adams.

**Monaca, Pa.**—J. L. Connor, of Freedom, was awarded the contract by Council for

the construction of sewers in portions of Fifth and Sixth streets, Pennsylvania avenue, Indiana avenue, at \$3,010.

**Pittsburg, Pa.**—Architects Klapff & Dickson let general contract to the Ley Construction Company for a two-story and basement engine house for the City of Pittsburg; cost, \$12,000.

**Scranton, Pa.**—The bids for repairing Wyoming avenue, between Pine and Larch streets have been disappointing; the Barber Asphalt Company explained in a letter that they would not come within the City Engineer's estimate, and so they submitted no bid. The only other bid received, which was from the McDonald Construction Company, formerly Lee & McDonald, was \$1,000 over the estimate, and it was rejected, and the job will be readvertised. The bid on Wyoming avenue was \$2.30 per square yard; on Webster avenue, between Linden and Mulberry streets, it was \$2.39. The Barber Company's bid was \$2.55.

The bids for the painting of bridges in various parts of the city were also opened. Following is the schedule:

Vassilaros Contracting Co.: Parker street, \$364; Leggetts street, \$185; Market street, \$350; Carbon street, \$364; Dodgetown, \$300; South Washington avenue (R. B.), \$305.

C. J. Potter: Parker street, \$185; Leggetts street, \$30; Market street, \$125; Carbon street, \$125; Dodgetown, \$125; South Washington avenue (R. B.), \$125.

Victor Kempler: Parker street, \$500; Leggetts street, \$425; Market street, \$500; Carbon street, \$450; Dodgetown, \$475; South Washington avenue (R. B.), \$475.

People's Painting and Decorating Company: Parker street, \$345.60; Leggetts street, \$96; Market street, \$161; Carbon street, \$286; Dodgetown, \$130; South Washington avenue (R. B.), \$140.

H. C. Prevo: Parker street, \$384; Leggetts street, \$190; Market street, \$364; Carbon street, \$399; Dodgetown, \$303; South Washington avenue (R. B.), \$385.

Owen J. Hughes: Parker street, \$285; Leggetts street, \$40; Market street, \$285; Carbon street, \$285; Dodgetown, \$275; South Washington avenue (R. B.), \$270.

George A. Senberg: Parker street, \$247; Leggetts street, \$120; Market street, \$225.50; Carbon street, \$227.50; Dodgetown, \$223.25; South Washington avenue (R. B.), \$217.25.

**Tyrone, Pa.**—Mr. Orr reports that three bids for the paving of Washington avenue had been received; they were from Lanners Brothers, Anthony Anstead and H. G. Hinkle; that of the Lanners Brothers was low and the firm was awarded the contract.

**Warren, Pa.**—The Town Council has given W. R. Lavery the contract for paving Second street, between Liberty and Market, with asphalt block, same as Market street; also for paving Third street, between Liberty and Market, and Liberty street, between Fourth and Fifth, with Kushequa paving block.

**Wilkinsburg, Pa.**—A contract for 1,600 square yards brick paving, 4 inches thick, on gravel foundation, with 2-inch sand cushion, was awarded to Elliott S. Davis at \$1.38 per square yard. For 3,200 cubic yards earth excavation the price was 38 cents per cubic yard.

**Knoxville, Tenn.**—The following are the prices for street paving bid May 22 and June 9: Barber Asphalt Paving Company, asphalt; first bid, \$2.34; second bid, \$1.69 to \$2.

Southern Paving and Construction Company, brick; first bid, \$2.20 to \$2.36; second bid, \$1.80 to \$2.22.

Southern Paving and Construction Company, asphalt; first bid, \$1.98; second bid, \$1.65 to \$1.85.

McCarthy Construction Company, brick; first bid, \$2.14 to \$2.34; second bid, \$1.94 to \$2.29.

McCarthy Construction Company, asphalt; first bid, \$2.05; second bid, \$1.65 to \$1.73.

Southern Bitulithic Company, bitulithic; first bid, \$2.22; second bid, \$1.89 to \$2.05.

The Board of Public Works has awarded the contract for the construction of the extension to the First Creek sewer main, about 7,000 feet long, using 18, 15 and 12 inch vitrified pipe, except in some few points where it was found necessary to use cast iron pipe, to John L. O'Connor, at \$11,820; this is a reduction of \$1,000 from the former low bid and a saving of that much to the city by the Board readytising. The bids were as follows: James A. Hannifin, \$13,925; Borchers-Wardrop Company, \$12,800; L. R. Adney and W. B. Crenshaw, \$13,500; M. F. Rourke Company, \$14,175; John L. O'Connor, \$11,820; Ahler Plumbing Company, \$13,400; P. J. Curran, \$12,600; J. W. Weatherford, \$11,973.87.—S. D. Newton, City Engineer.

**Dallas, Tex.**—Bids for the building of the new East Dallas and Oak Lawn fire stations were opened as follows: Hubbell & Green, \$14,867 for the East Dallas station and \$14,896 for the Oak Lawn station. Instead of inclosing checks with their bids, they sent contract bonds, and the latter and their bids will be returned to them. L. R. Wright is

willing to build the East Dallas station for \$15,365 and the one at Oak Lawn for \$15,395. Wood & Dean wanted \$14,661 for each of the two stations. Boyd & Webster say \$12,366 each. H. J. Emmins would build the two of them for \$27,733. Hughes and O'Rourke want \$14,000 for each of the buildings. The Hewitt Contract Company's bid was \$14,500 for each station. Thomas & Hill put their figures at \$13,785 a piece or a total of \$27,500. Defreese & Padgett would build the station in East Dallas for \$15,298 and the one in Oak Lawn for \$15,358. Chrisman & Nesbett's are \$14,690 for Oak Lawn and \$14,480 for East Dallas. Jackson & Wolf want \$28,367 to build both stations and Ernest Wilks says \$28,000 for the two.

On the new pumping station H. J. Emmins' bid was \$28,227, with some allowance for extras. Frank Schultz bid \$34,785. John F. Johnson of Denton would build it for \$29,192. L. R. Wright would build it for \$30,400. Hughes & O'Rourke made the lowest figures, a bid of \$27,777. Boyd & Webster's figures were \$30,093.

The only bid received for paving a portion of Ross avenue was from the Texas Bitulithic Company. There are 13,000 yards of work to be done, which the company would do for about \$33,000. Referred to Commissioner Doran.

**Tyler, Tex.**—Contract just let for paving portion of North Spring avenue; approximately 4,000 square yards; price for paving, \$1.12 per square yard, on 5-inch concrete base, cement filler; excavation, 35 cents 500 feet haul; the contract was awarded to Ockander Bros., of Waco and Texarkana.—John H. Bonner, Mayor.

**Seattle, Wash.**—The following bids have been received by the Board of Public Works for the improvement of East Denny Way and other streets: Young & Urick, 204 Pioneer Building, Seattle, \$26,995; H. F. Jahn & Co., Empire Building, Seattle, \$27,838; T. Ryan, Sullivan Building, Seattle, \$25,427 (awarded contract); S. Krogh, Seattle, \$28,161; T. I. Peterson, Seattle, \$26,862.

**Janesville, Wis.**—P. W. Ryan has been awarded contract for 2,973 square yards, granite macadam, 4 to 3 inches, on limestone foundation, 6 to 4 inches, including 363 cubic yards earth excavation, at \$3,219.24, and resetting 1,036 feet curb and gutter, at 55 cents per linear foot; Dunn & Mead bid \$3,303.23 and Ryan & Finley, \$5,385.58 for the paving, the bids for curbing being: B. P. Crossman, 53½ cents; Dunn & Mead, 50 cents; Ezra Reel, 51½ cents; G. D. Cannon, 51 cents, and Claude Snyder, 52½ cents.—C. V. Kerch, City Engineer.

**Welland, Ont., Can.**—John Connolly, Toronto, Ont., has been awarded the contract by the city for the construction of sewers in the North Ward at about \$15,000.

**Montreal, Que., Can.**—The Roads Committee has awarded the following contracts for the construction of sewers: To L. Giguere, sewer in Belanger street, \$14,622; M. Dineen, sewer in Christopher Columbus street, \$17,382; Meredith & Heffernan, sewer in Dufferin street, \$16,898; J. Giguere, sewer in Demontigny street, \$53,407; fourth section of relieving sewer to Back River, the Rexford Bosphorus Company, \$54,573.

**Havana, Cuba.**—Governor Magoon has issued a decree authorizing the Department of Public Works to close with McGivny & Rockey a contract for the paving and sewerage of Havana, which has been pending for several years. The work will cost between \$10,000,000 and \$11,000,000, of which amount the city will pay one-third and the State the remainder.

## INCORPORATIONS

**Atlantic Filter Co.**, Buffalo, N. Y.; to manufacture water filters and purifiers, etc.; capital, \$500,000. Incorporators: F. Jerome Newman, 306 Linwood avenue; Delancey P. White, 546 Delaware avenue, both of Buffalo; Alfred W. Gray, 517 Jefferson avenue, Niagara Falls, N. Y.

**Construction and Engineering Co., Ltd.**, Wilmington, Del.; capital, \$100,000. Incorporators: Harry S. Collette, 151 West One Hundred and Fifth street, New York; William L. Ransom, 85 Java street, Brooklyn; George W. Bunnell, Plainfield, N. J.

**Dear Heat Distributor and Specialty Co.**, Newark, N. J.; to manufacture and lease gas and oil stoves, machines and appliances for the production of light, heat and power; capital, \$60,000. Incorporators: Mark Dean, Edwin A. Scott, Frank A. Boettner, as above.

**Gore Arc Lamp Co.**, Brooklyn, N. Y.; to manufacture electric arc lamps; capital, \$50,000. Incorporators: George L. Woolley, 111 St. Johns place; Henry T. Berry, 1359 Fulton street; Harry T. Asbury, 767 Putnam avenue, all of Brooklyn.

**Imperial Silica Sand Co.**, Jersey City, N. J.; sand, clay, cement, manufacture paving and pressed brick, etc.; capital, \$100,000. Incorporators: Robert H. Chinnoch, Helger Bommerdale, Harding Kimberland, as above.

**Kingston Construction and Engineering Co.**, Kingston, N. Y.; capital, \$10,000. Incorporators: J. V. Burgevin, Kingston, N. Y.; G. L. Reilly, 115 Main street, Ashley, Pa.; R. M. Shoemaker, 412 South Franklin street, Wilkes-Barre.

**Knickerbocker Portland Cement Co.**, New York, N. Y.; to manufacture Portland cement; capital, \$10,000. Incorporators: J. Disbrow Baker, Yonkers, N. Y.; Thomas F. Barrett, 37 Wall street, New York; Arthur W. Britton, East Orange, N. J.

**Leadite Co.**, Dover, Del.; to manufacture artificial pipe jointing, material; capital, \$500,000. Incorporators: F. W. Mills, H. M. Browne, A. H. Nelson, 154 Nassau street, New York.

**MacDonald Construction Co.**, New York, N. Y.; general construction, build railways; capital, \$25,000. Incorporators: George MacDonald, Charles A. Hickey, Vincent T. Coughlin, 346 Broadway, New York.

**McHenry Electric Service Co.**, The Temple, Chicago, Ill.; to operate electric light and power plant; capital, \$25,000. Incorporators: George K. Paige, Lloyd Howell, P. J. Bonstra.

**Mohawk Power Co.**, Glens Falls, N. Y.; to manufacture gas and electricity for light, heat and power. Incorporators: Eugene L. Ashley, Claude L. Snow and others.

**Narragansett Fire Brick Co.**, Somerset, Mass.; brick, lime, etc.; capital, \$100,000. President, William E. Fuller, Fall River; treasurer, John B. Hadaway, Swampscott; Clerk, John Bright, Somerset.

**People's Light, Water and Power Co.**, Newport, Ark.; capital, \$25,000. Incorporators: F. R. Suits, George O. Bube and others.

**New York & New Jersey Brick Co.**, Newark, N. J.; to manufacture bricks, including front bricks, enameled bricks, terra cotta, tiling, fire bricks, etc.; capital, \$125,000. Incorporators: Charles E. Patton, George Tierman, Frank H. Parcells, as above.

**Philadelphia Electric Co.**, Philadelphia, Miss.; capital, \$10,000. Incorporators: N. A. Cramer, H. A. Cramer and A. Cramer.

**Vulcan Incinerator Co.**, New York, N. Y.; to manufacture and operate utensils for handling rubbish, garbage, ashes and refuse; capital, \$10,000. Incorporators: Adolph Kern, Henry Kern, Lester J. Saul, 157 Cedar street, New York.

## TRADE NOTES

**Cast Iron Pipe.**—Aggregate tonnage placed has diminished recently, but the firmness in pig iron prices strengthens the market. Quotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. Birmingham.—It is estimated that orders of from 200 to 600 tons that are now in sight aggregate approximately 36,000 tons. The fact that financial arrangements have been made for the construction of a new pipe plant shows the trend of the market. Quotations, 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. New York.—Carload lots of from 4 to 8-inch, are fairly numerous. Quotations: Carload lots, 6-inch, \$24.50 and \$25 at tidewater.

**Lead.**—The lead market was dull. The American Smelting and Refining Company's price was firmly held at 4.50c. Consumers have been buying sparingly, however. The Metal Exchange quoted the market at 4.47½@4.52½c. The St. Louis market was dull at 4.40@4.45c. In London Spanish was quoted easy at £12 12s. 6d. and English at £13 2s. 6d. Exports from New York were 1,000 tons to Europe.

**Pump Catalogues Wanted.**—William Perry, Maplewood avenue, Cote des Neiges, Montreal, Canada, wants manufacturers of pumps to send him copies of their catalogues.

**Trench Pump.**—The Edison Manufacturing Company, 255 Atlantic avenue, Boston, Mass., issues a folder No. 18 describing their trench pumps. These pumps are used by contractors, railroad builders, city and government departments on account of their ability to handle water containing sand, mud or dirt without choking. They are the best apparatus for moving large quantities of water quickly and economically by hand power. The manufacturers state that 70,000 Edison diaphragm pumps have been

sold in 15 years. The same company make a powerful hand-power force pump for odorless excavating.

**Pipe Company Report.**—Heavy shrinkages in gross and net earnings and a big deficit instead of a surplus for the year were recorded by the United States Cast Iron Pipe and Foundry Company in its annual report for the fiscal year ended May 31. Total income was \$774,274, compared with \$2,112,051, and interest, and reserve appropriations, \$102,000, leaving net profits of \$672,274, compared with \$1,813,051 for the preceding year. The deduction of preferred stock dividends of \$875,000, and common stock dividends of \$250,000, compared with \$500,000 for the previous year, left a deficit of \$202,726 for the year, compared with a surplus of \$938,051 for 1907. The total surplus amounted to only \$179,075, compared with \$944,259. There was reserved for improvement work \$163,051, compared with \$312,458, leaving a profit and loss surplus of \$16,024, compared with \$631,801. The company's net profits for the year were equivalent to 5.3 per cent. earned on its \$12,500,000 of 7 per cent. preferred stock. The general balance sheet, as of May 31, showed total assets of \$29,999,999, compared with \$31,240,844, on May 31, 1907, and \$30,494,354 on May 31, 1906. E. R. Thomas and C. E. Burke withdrew from the company's directorate at the annual meeting of stockholders recently and were succeeded by N. F. Brady, vice-president of the New York Edison Company, and John Arthur Hayes, resident manager of the company's plant in Burlington. In his report to the shareholders, George B. Hayes, the President, said that business has improved since spring, and suggested that a portion of the extra reserve created for additional working capital, and from extraordinary net earnings in the past should be used for dividends until the present depression in cast-iron pipe has disappeared.

**Water Plant Not Sold.**—The negotiations completed some time ago for the sale of the Consolidated Water Plant of Pennsylvania to I. E. Yost of Waynesboro and F. D. Landis of Mechanicsburg were not carried out as arranged, those gentlemen and the Home Company disagreeing on some points of the deal. Amicable settlement was made and the Home Company will remain possessors of the plant.

**New Cement Mill.**—W. J. Oliver will be President of the \$6,000,000 Mobile, Portland, Cement and Coal Company, which was organized recently. The company was chartered at Augusta, Me., and will start the erection of a plant on the Gulf of Mexico, to cost \$1,000,000, with an output of 3,000 barrels daily. The company owns large cement and coal properties in Alabama and is said to be the largest organization of the kind in the world. C. H. Treat, United States Treasurer, and W. W. Finley, president of the Southern Railway, are among the directors. The company has secured contracts for cement which will be shipped through the Panama Canal.

**Police Auto-patrol Wagon.**—The H. H. Franklin Manufacturing Company, Syracuse, N. Y., has turned over to the Police Department of Syracuse a handsome new automobile patrol wagon. The new patrol, the first ever built by the Franklin company and an entire new type of police service car, has been leased by the city for a test until January 1. If proved satisfactory by that time an arrangement will be made for its purchase. The patrol is built along the lines of the modern construction of po-

lice wagons and is extremely light, weighing but one ton. The motor is of an air-cooled type and is rated at 16-horsepower, with a maximum speed capacity of 18 miles an hour. The wheels are of solid rubber; the seating capacity is sufficient for 12 persons. The body is covered with wire grill work and removable storm curtains. The seats are of a folding type, arranged with a view to simplicity and ease of cleaning. The interior is lighted with small electric lights. The driver's seat is protected by a glass front with a transom window top and is built on the extreme front of the car, forming a covering to the motor and so economizing space.

**Removal.**—The main office of the Wyckoff Pipe and Creosoting Co., Inc., has been moved from Stamford, Conn., to New York City, quarters having been taken in the Hudson Terminal, 50 Church street.

The Archer Iron Works, Chicago, Ill., has moved to 739 First National Bank Building.

## PERSONALS

**BIEBER, SIDNEY**, Fire Marshal of the District of Columbia, who was retired as a result of illness following the big fire at Baltimore, Md., several years ago, was tendered a banquet at Harvey's by one hundred of his Washington friends, Thursday evening, on his return from Chicago, Ill., where he was elected a member of the Republican National Committee.

**BINGHAM, C. A.**, Borough Engineer of Carlisle, Pa., has opened an office in that city for private practice.

**CRAFTS, N. H.**, formerly City Engineer of Boston, Mass., died last month at his home in Stoughton, Mass.; he entered the service of the city in 1849 and was City Engineer from 1864 to 1872.

**DAVIS, EDSON J.**, of New Jersey, has been appointed engineer on the construction of the great aqueduct the completion of which, in about five years, will inaugurate a new system of water supply for Los Angeles, Cal.

**DIMMICK, J. B.**, Mayor of Scranton, Pa., City Solicitor D. J. Davis, Thomas W. Davis, President of the Select Council; A. L. Lewis, member of the Select Council, and Charles Raines, Jr., and Thomas W. Thomas, of the Common Council, have visited Rochester, N. Y., Cleveland, O., and other cities, with a view to bettering the method of disposing of garbage and refuse in Scranton.

**ERICSON, JOHN**, City Engineer of Chicago, Ill., was assured that his application for the appointment as Director of Public Works of Stockholm, Sweden, would receive favorable action, but owing to his connections and unfinished work in this country, Mr. Ericson has decided not to accept the opportunity.

**GALLAGHER, JOHN F.**, Superintendent of the Kingston, N. Y., Water Works, has been reelected.

**GRAY, SAMUEL M.**, Providence, R. I., has been engaged to design a complete sewerage system for Albuquerque, N. M.

**HAFFEN, LOUIS F.**, President of the Borough of Bronx, New York City, has been recommended for removal by the Commissioners of Accounts, and Mayor McClellan has forwarded the papers in the case to Governor Hughes.

**HARRIS, A. J.**, Chief of the Fire Department of Tampa, Fla., for more than eighteen years prior to the advent of the Frecker administration two years ago, when he was replaced by Tucker Savage, has again been appointed to the position by Mayor Wing.

**HEALY, FRANK**, Chief of the Fire Department of Wheeling, W. Va., from 1890, who had been a fire-fighter since early manhood,

passed away recently, aged 55 years.

**HOWARD, JOHN B.**, has been elected Mayor of Holly Springs, Miss., while a recount will be necessary to decide whether W. C. Jones or Robert De Jarnette has been elected Street Commissioner.

**JOHNSON, EUDORUS M.**, former City Comptroller of Indianapolis, Ind., and who filled other public offices, died recently, aged 60 years.

**JONES, COL. MARYUS**, has been elected Mayor of Newport News, Va., over Fred Read.

**KANE, JOHN P.**, Mayor of Lawrence, Mass., has gone to camp with Company F, Ninth Regiment, Massachusetts National Guard, of which he is Paymaster, and John Breen, President of the Board of Aldermen, is officiating as Acting Mayor during the absence of the city's executive.

**KRAUSE, GEORGE DERR**, member of the Select Council of Lebanon, Pa., has been made Chairman of the newly-created Sewerage Commission, which will consider the plans for constructing and financing a system of sewerage for storm and house sewerage, and to prevent floods; the other members of the Commission are: Robert G. Adams, John F. Reed, Sydney Johnson, William E. Schaak, Dr. H. E. Naulfair and Henry G. Umberger, representing all the wards in the city.

**LANMAN, TRUMAN**, Superintendent of Parks of the District of Columbia, salary \$1,400 per annum, has been transferred to the position of Superintendent of Trees and Parks, at a salary of \$1,800, under a provision of the District appropriation bill which takes effect July 1.

**LEGGAT, ALEXANDER**, City Engineer of Butte, Mont., has resigned and has resumed practice as a mining engineer and agent for non-resident owners of mining property in Montana and Idaho; his offices will be in the Harbour Building, Butte.

**MAYNARD, W. R.**, Mayor of Dandridge, Tenn., has been reelected, as have also Aldermen Arthur Holtsinger, Hal S. Harris and Dr. J. W. Cowan, while new Aldermen elected were: G. Walter Remine and Oliver Hart, merchants of the town, and Prof. W. A. Lyle, of the County Board of Education.

**PAFF, FRED J.**, Mayor of Alexandria, Va., has been reelected, also the following Aldermen: J. M. Hill, W. W. Ballenger, J. R. N. Curtin, and W. H. Sweeney, and these Councilmen: E. S. Leadbeater, M. L. Risheill, Howard W. Smith, R. D. Brumback, R. L. Monroe, J. T. Harrison, C. B. Marshall and F. C. Spinks.

**RIDDICK, DR. JAMES G.**, Mayor of Norfolk, Va., has been reelected, also Col. Harry Hodges, member of the Board of Control of the city.

**SANTON, BRYAN**, Cincinnati, O., has been elected President of the State Board of Health vice Dr. G. B. Palmer of Geneva, and Dr. J. C. Crossland of Janesville, Vice-President.

**SCHULER, JOSEPH G.**, Chief of the Fire Department of Wilkes-Barre, Pa., has been granted leave of absence to attend the convention of the Fire Chiefs at Columbus, O., in which city he will also inspect the new \$5,000 fire truck under construction there for his Department. The Fire Committee of Councils has appropriated \$75 for the expenses of the Fire Chief.

**SCHULER, RODOLPH**, Plaquemine, La., has been elected Chief of the Fire Department without opposition, and J. Ferdinand Herbert, Secretary and Treasurer, while the following committee has been appointed to draft resolutions in regard to fire limits and regulations for the Fire Department.

**SMITH, G. W.**, Mayor of Lynchburg, Va., has been reelected, defeating John P. Thompson.

**WILSON, E. A.**, Assistant City Engineer of Duluth, Minn., died recently.

## LOWEST BIDS RECEIVED FOR SEWER CONSTRUCTION

CITY	Material	Depth of Trench	EXCAVATED MATERIAL		Size Pipe	Price	Mean of All Bids	MANHOLES		Rock excavation	Wages Common Labor
			Nature	Price				Depth	Price		
South Orange, N. J.	Clay Pipe.	8'-10'			10"	\$0.77		0'-10'	\$44.00		
	Cast Iron.	10'-12'			10"	.87		Each 1' extra	4.77		
	Clay Pipe.	6'-6"			10"	2.77					
		6'-8"			8"	.57					
		8'-10'			8"	.67					
		10'-12'			8"	.77					
		12'-14'			8"	.77					
	Cast Iron.	6'-6"			8"	.97					
	Clay Pipe.	6'-8"			8"	2.27					
		8'-10'			4"	.37					
		9'-7"	Rock and clay.		4"	.37					
Cedar Rapids, Ia.	Brick.....				4"	.37					
Shenandoah, Ia.	Clay Pipe.	0'-8'		\$0.90	7"	9.95	10.42				
		8'-12'		1.00	12"	.44	.49				
		12'-16'		1.15							
Bloomington, Ill.	Clay Pipe.	10.6'	Clay.		8"	.24					
	" "	5'			10"	.30					
	" "	8'			12"	.42					
	" "	10.3'			15"	.62					
		7.94'			12"	.60					
		7.44'			15"	.60					
		10.	Loam clay.		12"	.60					
Norfolk, Va.	Clay Pipe.	9'	Sand.		10"	.50					
	" "	10'			8"	1.93	2.68	6.5'	55.		
	" "	6.5'			4"	.12	1.39				
	" "	4.5'			5"	13.50					
Hartford, Conn.	Brick.....				35"	1.92					
Canton, O.	Clay Pipe.				12"	.41					
	" "				15"	.62					
	" "				18"	.78					
	" "				20"	1.02					
San José, Cal.	Concrete...				24"	1.295					
Downers Grove, Ill.	Clay Pipe.				33"	4.40					
Springfield, O.	Concrete...				15"	.79		5'	40.		
	Reinforced concrete				12"	.61					
	Clay Pipe.				10"	.50					
					24"	2.50					
					30"	2.95					
					33"	3.50					
					24"	2.60					
					30"	3.15					
					33"	3.70					
					6"	.75					
					8"	.80					
					18"	2.00					
					24"	2.15					
					30"	3.20					
					33"	3.85					
					24"	2.50					
					30"	2.95					
					33"	3.50					
					24"	2.70					
					30"	.45					
					33"	3.70					
Bartlesville, Okla.	Jackson reinforced concrete Ohio Pipe Co.	4'			6"						
		6'			8"						
		8'			8"						
		10'			8"						
		12'			8"						
		14'			8"						
		16'			8"						
		4'			10"						
		6'			10"						
		8'			10"						
		10'			10"						
		12'			10"						
		14'			10"						
		16'			10"						
		4'			10"						
		6'			10"						
		8'			10"						
		10'			10"						
		12'			10"						
		14'			10"						
		16'			10"						
		4'			12"						
		6'			12"						
		8'			12"						
		10'			12"						
		12'			12"						
		14'			12"						
		16'			12"						
		4'			14"						
		6'			14"						
		8'			14"						
		10'			14"						
		12'			14"						
		14'			14"						
		16'			14"						
		4'			16"						
		6'			16"						
		8'			16"						
		10'			16"						
		12'			16"						
		14'			16"						
		16'			16"						
		4'			18"						
		6'			18"						
		8'			18"						
		10'			18"						
		12'			18"						
		14'			18"						
		16'			18"						
		4'			20"						
		6'			20"						
		8'			20"						
		10'			20"						
		12'			20"						
		14'			20"						
		16'			20"						
		4'			22"						
		6'			22"						
		8'			22"						
		10'			22"						
		12'			22"						
		14'			22"						
		16'			22"						
		4'			24"						
		6'			24"						
		8'			24"						
		10'			24"						
		12'			24"						
		14'			24"						
		16'			24"						
		4'			26"						
		6'			26"						
		8'			26"						
		10'			26"						
		12'			26"						
		14'			26"						
		16'			26"						
		4'			28"						
		6'			28"						
		8'			28"						
		10'			28"						
		12'			28"						
		14'			28"						
		16'			28"						
		4'			30"						
		6'			30"						
		8'			30"						
		10'			30"						
		12'			30"						
		14'			30"						
		16'			30"						
		4'			32"						
		6'			32"						
		8'			32"						
		10'			32"						
		12'			32"						
		14'			32"						
		16'			32"						
		4'			34"						
		6'			34"						
		8'			34"						
		10'			34"						
		12'			34"						
		14'			34"						
		16'			34"						
		4'			36"						
		6'			36"						

## LOWEST BIDS RECEIVED FOR SEWER CONSTRUCTION—Continued.

CITY	Material	Depth of Trench	EXCAVATED MATERIAL		Size Pipe	Price	Mean of All Bids	MANHOLES		Rock Excavation	Wages Common Labor	Miscellaneous
			Nature	Price				Depth	Price			
Yorkville, S. C. ....	Clay Pipe...	6'-6"	.....	\$0.20	8"	.125	.....	.....	.....	.....	.....	Deep cut connections, \$4.00.
		6'-8"	.....	.25	.....	.....	.....	.....	.....	.....	.....	Cast iron, \$40 per ton.
		8'-10"	.....	.35	.....	.....	.....	.....	.....	.....	.....	Concrete in form \$10 per cu. yd.
		10'-12"	.....	.45	.....	.....	.....	.....	.....	.....	.....	Concrete around pipes.
		12'-14"	.....	.60	.....	.....	.....	.....	.....	.....	.....	\$10.80 per cu. yd.
		14'-16"	.....	.90	.....	.....	.....	.....	.....	.....	.....	Flushtanks, \$60; lampholes \$7.
		16'-18"	.....	1.10	.....	.....	.....	.....	.....	.....	.....	.....
		18'-20"	.....	1.45	.....	.....	.....	.....	.....	.....	.....	
		20'-22"	.....	1.85	10"	.1825	.....	.....	.....	.....	.....	.....
		6'-6"	.....	.22	.....	.....	.....	.....	.....	.....	.....	.....
		6'-8"	.....	.27	.....	.....	.....	.....	.....	.....	.....	.....
		8'-10"	.....	.37	.....	.....	.....	.....	.....	.....	.....	.....
		10'-12"	.....	.50	.....	.....	.....	.....	.....	.....	.....	.....
		12'-14"	.....	.70	.....	.....	.....	.....	.....	.....	.....	.....
		14'-16"	.....	.95	.....	.....	.....	.....	.....	.....	.....	.....
		16'-18"	.....	1.15	12"	.24	.....	.....	.....	.....	.....	.....
		6'-6"	.....	.30	.....	.....	.....	.....	.....	.....	.....	.....
		6'-8"	.....	.37	.....	.....	.....	.....	.....	.....	.....	.....
		8'-10"	.....	.45	.....	.....	.....	.....	.....	.....	.....	.....
		10'-12"	.....	1.10	.....	.....	.....	.....	.....	.....	.....	.....
		12'-14"	.....	2.50	.....	.....	.....	.....	.....	.....	.....	.....
Grand Rapids, Mich. ....	Reinforced Concrete	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis, Mo. ....	Reinforced Concrete	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coshocton, O. ....	Clay Pipe...	5'	Clay and Sand	.....	8"	.27	.....	.....	.....	.....	.....	.....
		7'	.....	.....	8"	.31	.....	.....	.....	.....	.....	.....
Fort Dodge, Ia. ....	.....	9'	.....	.....	8"	.31	.....	.....	.....	.....	.....	.....
		11'	.....	.....	8"	.36	.....	.....	.....	.....	.....	.....
Harlan, Ia. ....	Clay Pipe...	7'-8'	.....	.....	8"	.88	.....	.....	.....	.....	.....	.....
		.....	.....	.....	8"	.83	.....	.....	.....	.....	.....	.....
Oil City, Pa. ....	Clay Pipe...	.....	.....	.....	8"	.79	.....	.....	.....	.....	.....	.....
		.....	.....	.....	8"	.60	.....	.....	.....	.....	.....	.....
Henderson, N. C. ....	Cast Iron...	6'	.....	.....	8"	.65	.....	.....	.....	.....	.....	.....
		8'	.....	.....	8"	.75	.....	.....	.....	.....	.....	.....
Spencer, Ia. ....	Clay Pipe...	7"	.....	.....	10"	1.21	.....	.....	.....	.....	.....	.....
		9"	.....	.....	10"	1.50	.....	.....	.....	.....	.....	.....
Hartford, Conn. ....	Brick....	7'	.....	.....	10"	1.21	.....	.....	.....	.....	.....	.....
		18'	.....	.....	10"	1.40	12.39	50	.....	.....	.....	.....
Plainfield, N. J. ....	Clay Pipe...	22'	.....	.....	13	10.03	.....	125	.....	.....	.....	.....
		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bloomington, Ind. ....	Clay Pipe...	Under 6'	.....	.....	8"	.....	.....	.....	.....	.....	.....	.....
		6'-8"	.....	.....	8"	.48	.....	.....	.....	.....	.....	.....
Coshocton, O. ....	Clay Pipe...	8'	.....	.....	8"	.55	.....	.....	.....	.....	.....	.....
		10'-12"	.....	.....	8"	.64	.....	.....	.....	.....	.....	.....
Chillicothe, O. ....	Reinforced Concrete	Under 6'	.....	.....	8"	.70	.....	.....	.....	.....	.....	.....
		6'-8"	.....	.....	10"	.575	.....	.....	.....	.....	.....	.....
Gulfport, Miss. ....	Clay Pipe...	8'-10"	.....	.....	10"	.64	.....	.....	.....	.....	.....	.....
		10'-12"	.....	.....	10"	.75	.....	.....	.....	.....	.....	.....
Johnson City, Tenn. ....	Clay Pipe...	12'-13"	.....	.....	10"	.83	.....	.....	.....	.....	.....	.....
		6'	Clay and Rock	.....	24"	2.90	1.98	6'	30.00	2.58	1.50	Flush tanks, \$100. No ground water. Macadam streets.
Ponca City, Okla. ....	Casti'npipe	6'	.....	.....	18"	1.25	1.15	10'	40.00	.....	.....	.....
		8'	.....	.....	18"	1.10	1.15	.....	.....	.....	.....	.....
Greenburg, Pa. ....	Clay Pipe...	6'	Rock	.....	15"	.97	.....	.....	.....	.....	.....	Brick masonry, \$8.50 cu. yd.
		8'	Clay	.....	12"	.69	.....	.....	.....	.....	.....	C-basins, \$29; G basin, \$23.
Woonsocket, R. I. ....	Shelton, Conn. ....	7'	Rock	.....	10"	.47	.....	.....	.....	.....	.....	Lumber per M. B. M., \$12 to \$15.
		9'	Clay	.....	8"	.43	.....	.....	.....	.....	.....	Concrete Bulkheads, \$30.
Cast Iron...	.....	10'	.....	.....	6"	.195	.....	.....	.....	.....	.....	Extra concrete, \$6.
		12'	.....	.....	8"	.20	.....	27.50	.....	.....	.....	Brick masonry, cu. yd., \$7.
Ponca City, Okla. ....	.....	14'	.....	.....	10"	2.00	.....	.....	.....	.....	.....	Sidewalks, per sq. yd., 90 cts.
		16'	.....	.....	12"	2.71	.....	.....	.....	.....	.....	.....
Greenburg, Pa. ....	.....	18'	.....	.....	15"	2.98	.....	.....	.....	.....	.....	.....
		20'	.....	.....	18"	3.12	.....	.....	.....	.....	.....	.....
Woonsocket, R. I. ....	Clay Pipe...	7'	.....	.....	20"	3.28	.....	.....	.....	.....	.....	.....
		9'	.....	.....	24"	3.50	.....	.....	.....	.....	.....	.....
Shelton, Conn. ....	Clay Pipe...	10'	.....	.....	8"	.265	.....	36.00	3.50	.....	.....	Flushtanks \$75, Lampholes, \$6.
		12'	.....	.....	10"	.37	.....	.....	.....	.....	.....	.....
Cast Iron...	.....	14'	.....	.....	12"	.395	.....	.....	.....	.....	.....	.....
		16'	.....	.....	12"	.52	.....	.....	.....	.....	.....	.....
Ponca City, Okla. ....	.....	18'	.....	.....	12"	.63	.....	.....	.....	.....	.....	.....
		20'	.....	.....	12"	.....	.....	.....	.....	.....	.....	.....
Greenburg, Pa. ....	.....	6'	Rock	.....	24"	1.40	1.71	8'	32.00	.....	1.25	.....
		8'	Rock	.....	15"	.70	.877	7'	30.00	.....	.....	.....
Woonsocket, R. I. ....	.....	7'	Clay	.....	12"	.90	.96	.....	.....	.....	.....	.....
		9'	Clay	.....	10"	.50	.61	.....	.....	.....	.....	.....
Shelton, Conn. ....	.....	10'	.....	.....	15"	1.39	.....	.....	.....	5.00	1.75	.....
		12'	.....	.....	12"	1.00	.....	.....	.....	5.00	.....	.....
Cast Iron...	.....	10'	.....	.....	27"	3.25	.....	.....	.....	.....	.....	.....
		12'	.....	.....	42"	7.00	.....	.....	.....	.....	.....	.....
Ponca City, Okla. ....	.....	15'	.....	.....	36"	4.75	.....	.....	.....	.....	.....	.....
		18'	.....	.....	9"	.95	.....	.....	.....	.....	.....	.....
Greenburg, Pa. ....	.....	8'	.....	.....	36"	6.00	.....	.....	.....	.....	.....	.....

a Price includes manhole and lampholes. b Excavation prices per linear foot. Price for pipe is for furnishing and laying, regardless of depth.

c Price per foot includes manholes, etc. City furnishes pipe.

## Proposals

### PAVING STREET

Paducah, Ky.  
The Board of Public Works will receive bids until 3 o'clock p.m., July 7, 1908, for the improvement of Tenth street, from Broadway to Kentucky avenue.

Bids will be received on sheet asphalt, brick paving block and Warren's bitulithic paving, and figures on each bid reported to the General Council for their selection of material.

Approximate quantities are as follows:

Paving, 2,000 square yards.

A certified check on a bank of the City of Paducah, Kentucky, payable to John J. Dorlan, City Treasurer, for \$200.00, must accompany each bid. Plans and specifications can be seen at the City Engineer's office.

L. A. WASHINGTON,  
City Engineer.

(1) **COVERED SLOW SAND FILTERS FOR BERNHART SUPPLY.**

Reading, Pa.  
Sealed proposals will be received by the Board of Water Commissioners at 25 N. Eleventh street before 7:30 o'clock p.m. Friday, July 10, 1908, for constructing Bernhart Filters. Plans, specifications and proposal blanks can be had by applying in person at the office of the superintendent and Engineer, Emil L. Nuebling. Proposals must be accompanied by a certified check or proposal bond in the sum of \$15,000. The right is reserved to reject any or all proposals.

Attest: EDWARD ELBERT,  
LINCOLN S. RAMSEY, President,  
Secretary. (25-1)

**SEWER CONSTRUCTION—BRICK OR CONCRETE SEWERS**

Omaha, Nebraska, June 13, 1908.  
Sealed proposals will be received at the office of the City Engineer up to two o'clock P.M., Monday, July 6, 1908, for the construction of brick or concrete storm water sewers and appurtenances as per plans and specifications on file in the office of the City Engineer.

The work to be done embraces approximately as follows:

Izard street main sewer: 840 feet sewer, 10 feet in diameter; 860 feet sewer, 11 feet 3 inches in diameter; 1,440 feet sewer, 12 feet in diameter; 250 feet, more or less, of 16x7½ reinforced concrete construction; 80 feet sewer, 42 inches in diameter; 1,600 feet sewer, 30 inches in diameter; 150 feet open ditch work.

Jones street extension: 2,121 lineal feet 8-foot sewer; 252 lineal feet 5-foot sewer; 804 lineal feet 4-foot 10-inch sewer; 460 lineal feet 4-foot 2-inch sewer.

Payment for said work to be made upon a cash basis; 90 per cent. on monthly estimates; an additional 5 per cent. when work is accepted, and 5 per cent. in one year after the completion of the work.

Each bid shall be accompanied with a certified check in the sum of \$3,000 on the Izard street sewer proposal, and check also in the sum of \$1,000 on the Jones street extension proposal, as guarantee of good faith that the bidder will promptly enter into contract if award shall be made to him.

The city reserves the right to reject any or all bids.

ANDREW ROSEWATER,  
City Engineer. (26-1)

**CONCRETE SEWER**

South Peru, Ind.  
Sealed bids will be opened July 14, at 7:30 p.m., for constructing a sewer 8½ feet in diameter and 1,578 feet long, of concrete or reinforced concrete. Estimated cost, \$18,245.50.

Plans and specifications have been prepared by A. W. Smith, Civil Engineer.

GEO. F. MERLEY,  
Town Clerk. (1)

### CAST-IRON PIPE

#### Notice to Pipe Manufacturers

Sealed bids will be received by the Board of Public Service of the City of Springfield, State of Ohio, at the office of the Clerk of said Board, Room 5, City Building, until 12 o'clock, noon, of Friday, July 10, 1908, for furnishing

189 tons, 6-inch, cast-iron water pipe.  
263 tons, 12-inch, cast-iron water pipe.

70 tons, 16-inch, cast-iron water pipe.

The said pipe to be delivered f.o.b. cars, Springfield, Ohio, and shipment to be made before August 1, 1908.

Each bid must contain the full name of every person or company interested therein, and be accompanied by a bond in the sum of \$600, with two sureties to the approval of the Board, or a certified check upon some solvent bank, in like amount, as a guarantee that if the bid is accepted a contract will be entered and its performance properly secured.

It must be stated upon the wrapper or envelope containing said bid that the same is a bid for furnishing cast-iron pipe. Specifications for same can be had by applying at the office of the Superintendent of Water Works, City Building.

The right is reserved to reject any and all bids.

By order of the Board of Public Service.

WM. H. MAHONEY,  
(26-1) Clerk.

### PIG LEAD

#### Notice to Dealers in Pig Lead

Sealed bids will be received by the Board of Public Service of the City of Springfield, State of Ohio, at the office of the Clerk of said Board, Room 5, City Building, until 12 o'clock, noon, of Friday, July 10, 1908, for furnishing 8 tons (eight) of pig lead. The said lead to be delivered f.o.b. cars, Springfield, Ohio, and shipment to be made before August 1, 1908.

Each bid must contain the full name of every person or company interested therein, and be accompanied by a bond in the sum of \$100, with two sureties to the approval of the Board, or a certified check upon some solvent bank, in like amount, as a guarantee that if the bid is accepted a contract will be entered and its performance properly secured.

It must be stated upon the wrapper or envelope containing said bid that the same is a bid for furnishing pig lead. The right is reserved to reject any and all bids.

By order of the Board of Public Service.

WM. H. MAHONEY,  
(26-1) Clerk.

### PROPOSALS FOR PLANS AND SPECIFICATIONS FOR SEWER.

Sealed proposals will be received at the office of the City Engineer up to 6 o'clock p.m. Tuesday, July 7, 1908, for the preparation of plans and specifications, including estimate of all costs, for complete sanitary and storm water system, and sewage disposal plant. Such plans will necessitate the taking of all measurements and all levels of all streets by the Engineer making such plans. Address

J. H. PHILLipi,  
Shelbyville, Ind. (24-1)

### AQUEDUCT

#### Board of Public Works.

Los Angeles, Cal., May 15, 1908.

Sealed proposals will be received at the office of the Board of Public Works, July Seventeen, 1908, for the construction of the Jawbone Division of the Los Angeles Aqueduct, with a capacity of four hundred second feet, including about forty-three thousand lineal feet of lined tunnel, sixty thousand lineal feet of lined conduit, and three hundred forty thousand cubic yards of excavation. The work is subdivided into three sections, and separate or lump sum proposals will be received. Plans and specifications may be obtained from the Board.

HORACE B. FERRIS,  
Secretary.

### SALE OF BOILERS, ENGINES, PUMPS, ETC.

#### LEGAL NOTICE

Sealed bids will be received by the Board of Public Service of the City of Cincinnati, State of Ohio, at the office of said Board, until 12 o'clock noon of Monday, July 13, 1908, for the sale of boilers, pumping engines, deep well pumps, boiler feed pumps, hoisting engines, horizontal engines, tools, etc., at

Linwood Pumping Station,  
Cummingsville Pumping Station,  
Westwood Pumping Station,  
Front Street Pumping Station,  
Mt. Hope Pumping Station.  
Hunt Street Pumping Station.

List and descriptions can be procured in said office.

Each bid must contain the full name of every person or company interested in the same and be accompanied by a bond in the sum of twenty-five per cent. of the amount of bid, to the satisfaction of the Board, or a certified check on some solvent bank, as a guaranty that if the bid is accepted a contract will be entered into and its performance properly secured. Should any bid be rejected, such check will be forthwith returned to the bidder; and should any bid be accepted, such check will be returned upon the proper execution and securing of the contract.

Bidders are required to use the printed forms. The right is reserved to reject any and all bids.

By order of the Board of Public Service.  
JOHN J. WENNER, Clerk.  
June 13, 1908. (25-2)

### ELECTRIC ARC STREET LIGHTING

Wilkes-Barre, Pa.

SEALED PROPOSALS will be received at the office of the City Clerk, Wilkes-Barre, Pennsylvania, until Thursday, July 23, 1908, at 12 o'clock noon for lighting certain of the streets of the City of Wilkes-Barre with electric arc lights for the terms of three, five and seven years beginning July 1, 1908, in accordance with specifications and bidding blanks on file in said office, copies of which may be had upon application to the City Clerk. Proposals to be endorsed "Proposals for Electric Street Lighting," and addressed to Fred H. Gates, City Clerk, Wilkes-Barre, Pennsylvania. Each proposal must be accompanied by a certified check of the bidder for the sum of five thousand dollars (\$5,000) payable to the order of the City of Wilkes-Barre. Proposals will not be accepted later than 12 o'clock noon, July 23, 1908. The Joint Street Lighting Committee reserves the right to accept or reject any or all bids.

R. H. RICHARDS, Chairman.  
(25-2)

### SEWER SYSTEM

#### NOTICE TO CONTRACTORS

David City, Neb.

Sealed bids will be received at the office of the City Clerk, David City, Neb., up to 8 o'clock p.m. July 8, 1908, for furnishing material and labor and installing a sewer system for the City of David City.

Plans and specifications are on file and may be seen at the office of the City Clerk and at the office of the Engineers, 1416 First National Bank Bldg., Chicago, Ill.

Each bid must be accompanied with a certified check of 10 per cent. of the amount of the bid as a guaranty that the bidder will enter into contract and furnish the proper bond if awarded the contract.

The city reserves the right to reject any or all bids. For further information address

W. S. MCCOY,  
M. A. EARL & CO.,  
Engineers.  
City Clerk.

### WANTS

WANTED—Engineers, draftsmen, looking for opportunities to advance; write for list of 500 positions, free for the asking. Hapgoods, 305 Broadway, New York, or 1010 Hartford Bldg., Chicago.

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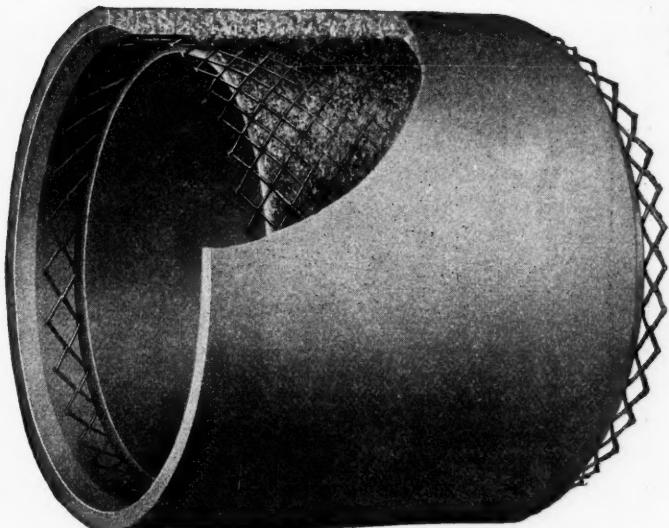
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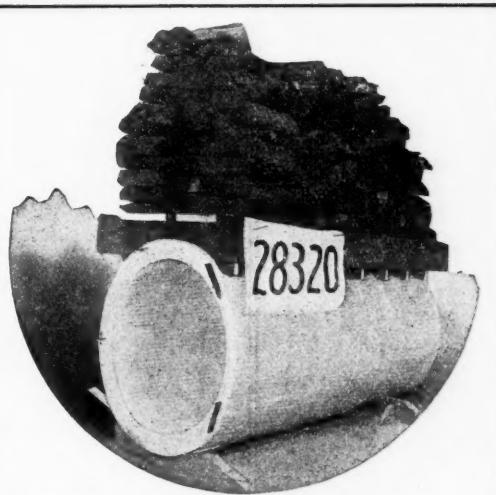
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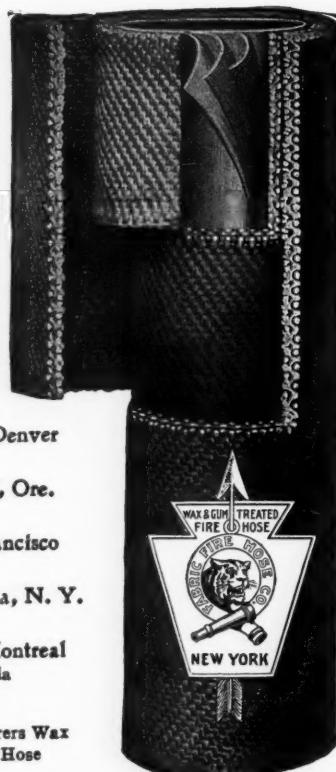
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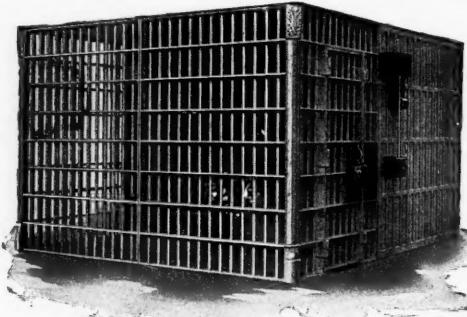
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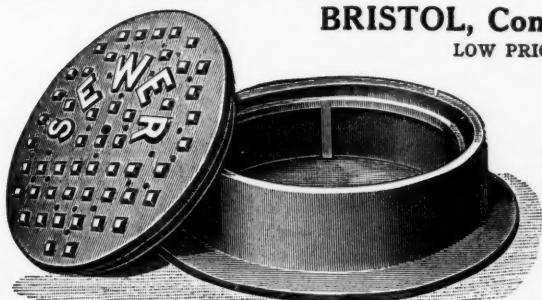
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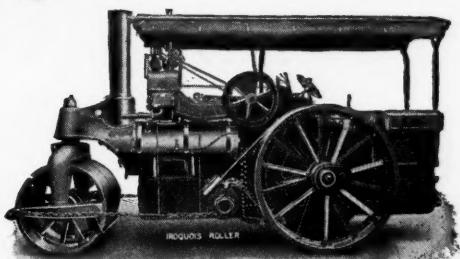
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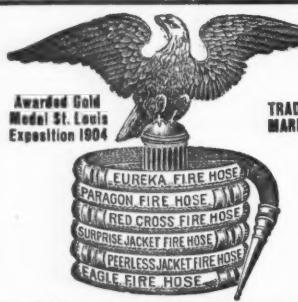
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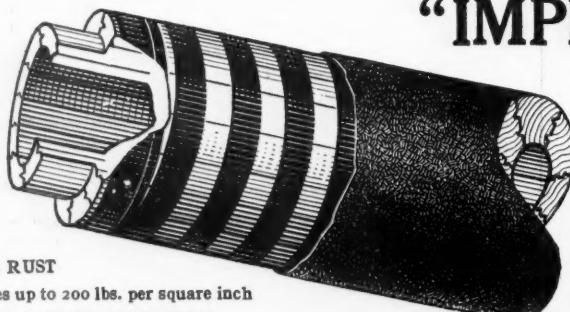
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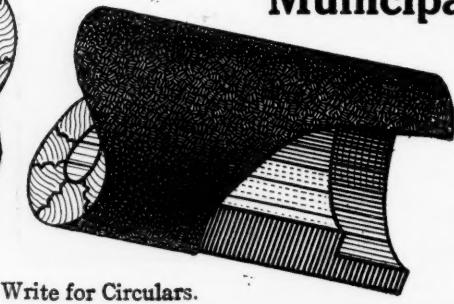
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